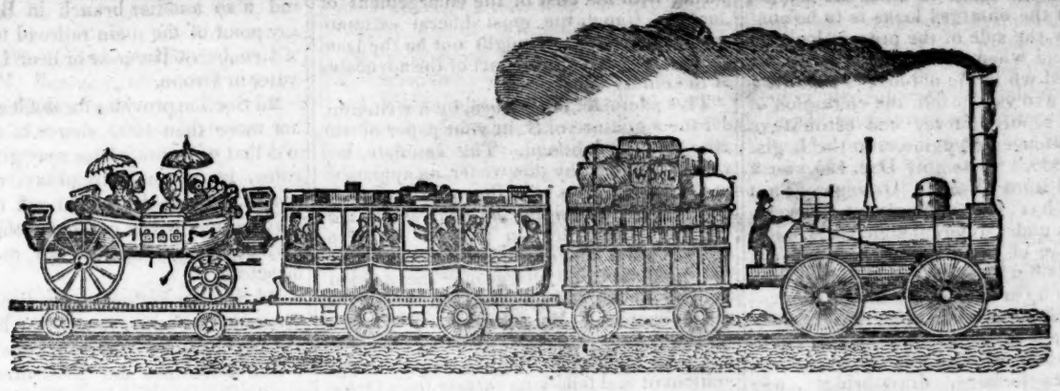

AMERICAN RAILROAD JOURNAL,

AND ADVOCATE OF INTERNAL IMPROVEMENTS.

PUBLISHED WEEKLY, AT NO. 132 NASSAU STREET, NEW-YORK, AT FIVE DOLLARS PER ANNUM, PAYABLE IN ADVANCE

D. K MINOR, and GEORGE C. SCHAEFFER, { EDITORS AND PROPRIETORS.] SATURDAY, OCTOBER 29, 1836. [VOLUME V.—No 43.

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AMERICAN RAILROAD JOURNAL.

NEW-YORK, OCTOBER 29, 1836.

WESTERN RAILROAD.

PROPOSALS will be received at the Office of the Western Railroad Corporation, in Worcester, until the 20th November, for the grading and masonry of the first division of the Road, extending from Worcester to East Brookfield, a distance of 12¾ miles.

Plans, profiles, etc., will be ready for examination after the 10th November. W. H. SWIFT, Resident Engineer.

Worcester, Mass. Oct. 19, 1836 43—tnov20

For the N. Y. Railroad Journal.

PENOBSCOT RIVER RAILROAD.

This, for a short road, is one of the most important projected in the State of Maine. It commences at Old Town, on the Penobscot river, and terminates at Bucksport, at the head of winter navigation. The length of the road will be about 28 miles, and connects with the villages of Milford, Bradley, Lower Stillwater, Eddington, Brewer, and the city of Bangor.

At Old Town, Milford, Bradley, and Lower Stillwater, there are about one hundred and thirty saw mills, that cut annually more than one hundred millions feet of boards, which have hitherto been rafted, and run over the falls to Bangor, with great loss and damage to the lumber—a loss, damage and expense far exceeding the cost of transportation upon a railway. During the past winter an application was made to the Legislature of Maine, and a very favorable charter for a railroad from Old Town to Bucksport was obtained. The route has been very fully explored, and a very favorable report made by the Engineer. The land is very level over which the railway will be constructed, with an abundance of cedar, timber and stone on the route, necessary for its construction, which can be had very cheap. The right of way will be generally freely granted, and in no case will any considerable damages be claimed.

Subscription books for stock were opened in September, at Orono and Bucksport, and about one half of the whole has been taken. The remaining half, it is expected, will be taken either in Boston or New-York.

The expense of constructing the road, including locomotives, transportation and passenger cars, is estimated at $271,864.66.

The annual income.

93 millions feet boards from Old Town and Milford, to Bucksport, at $1.50 per M.,	$49,000
30 millions from Lower Stillwater, at $1.40 per M.,	42,000
18 millions from Old Town to Bangor, at $1 00 per M.,	18,000
20 millions from Stillwater to Bangor, at 75 c. per M.,	15,000
Toll on clapboards, shingles, laths and staves,	8,000
Toll on wood and bark,	6,000
400 passengers weekly at $1, each,	20,800
15000 tons of merchandize, including corn, flour, fish, pork, salt, lime, coal, &c., to Orono and above, at 1.50 prton,	22,500
5000 tons to Bangor, during winter, at 1.25,	6,25
Amounting, in the whole, to	$187,55
Deduct annual expenses, as estimated in report,	23,422
Add interest on cost,	16,311
Annual expense and interest,	$39,733

Leaving a nett annual income of $147,817 or more than 50 per cent. on cost of the railway.

From the New-York Times.

ERIE CANAL ENLARGEMENT.

Messrs. Editors,—A writer under the signature of J. E. B. in your paper of the 9th inst., appears somewhat behind the intelligence of the age. If he had made inquiry at the proper source, he could have learned that contracts to a large amount had been entered into by the Canal Commissioners, under the law of 1834, for the construction of some 40 or 50 of the enlarged Erie Canal locks, and for portions of the enlarged canal between Rochester and the Hudson river, amounting in the aggregate to a sum near $2,000,000; and although these contracts embrace some of the largest structures and most difficult sections, the work is all to be completed in 1838, a little more than two years for its execution.

Here is evidence, if any was wanting, of the falsity of the repeated assertions of your correspondents "Oswego" and "J. E. B.," that the enlargement will require 12 or 15 years for its accomplishment. All the masonry and nearly all of the other work contracted for, is to be done in summer under the most favorable circumstances; and it is within the knowledge of every person acquainted with the subject, that if the funds were provided so that all the work could go on simultaneously, three or four years would be all the time required for the completion of the enlargement; but in the usual course of construction, five or six years is the utmost limit, unless the work is delayed for the want of funds.

The Erie canal is to be enlarged principally by raising the embankments; the culverts and aqueducts are to be extended in summer, and there certainly need be no interference with the navigation by carting

or wheeling the earth to raise the banks; and one of the enlarged locks is to be constructed by the side of the present locks in summer, and when completed, will in its turn be used while the old lock is rebuilt.

J. E. B. avows himself the champion of the "Able report, survey and estimate of E. F. Johnson, civil engineer, to the Legislature of 1835," (Assembly Doc. 195,) for a ship canal from Utica to Oswego. That document has been followed by several statements under different signatures, quoting it as one of great ability and *fidelity*, and the attempt has been made to impress the opinion upon the public that a *ship* canal or a *steamboat canal* (the writers have not settled, it is believed, which they prefer) with their large, unmanageable lock-gates, extra lockage, draw-bridges, and heavy ships, with masts, sails, tackle, &c., interrupted by portions of natural navigation, was preferable to the enlarged Erie canal, with the safety of a canal navigation for boats of equal tonnage, permanent bridges, and uniformity of traction from Lake Erie to the Hudson River.

I make no war upon these writers, but I again pronounce their statements a "medley of folly, inconsistency and ignorance," and appeal to their own articles for proof. The folly and inconsistency are clearly shown by the manner they condemn the Erie canal enlargement, when, at the same time, Mr. Johnson recommends the enlargement for a part of his *ship canal*—and their ignorance and inconsistency are evident from their estimates.

Mr Johnson estimates the ship canal or steamboat canal from Utica to Oswego, of 92½ miles long, at $1,131,989, or at the rate of $12,237.72 per mile, and this estimate was presented with memorials, asking legislative action. Subsequently, however, it appears that the same individual has discovered his errors, and has estimated the canal of the same dimensions at $3,750,000, or at the rate of $40,000 a mile.

Messrs. Editors, I suppose that J. E. B. is to be believed in his last communication, when he says that Mr. Johnson wrote the anonymous pamphlet alluded to, addressed to the last Legislature, which contains the larger estimate; although they differ more than three hundred per cent. and the smaller estimate is from the "able survey" of Mr. Johnson.

Will your correspondents, and the writers under the signature of Oswego, and J. E. B., acknowledge their error, and inform the public which of their statements are to be believed? Yours, S.

ERIE CANAL ENLARGEMENT.

The estimate of E. F. Johnson, Esq., of that portion of the Ontario and Hudson Canal, extending from Utica to Oswego, via Lake Oneida, &c. as stated in his report of survey, made in 1834, is $1,132,000 (assem. doc. 195) exclusive of the construction of the necessary feeders for the requisite supply of water, &c. This route embraces but 35 miles of *artificial* canal, ten miles only of which is entire new canal.

In the pamphlet signed "Oswego" which produced so great a sensation at Albany, the last winter, the statements of which, *neither have been nor can be refuted*, a round estimate is given of the probable cost of opening the above Canal by the way of Syracuse a distance of 98 miles, 70 of which is *artificial* Canal, at $3,750,000. This estimate was made in 1836, when the prices of labor &c. were one third higher than they were at the period of the survey first mentioned, and as it was made with the view of comparing with the cost of the enlargement of the Erie Canal, the most liberal estimate was made, that there might not be the least ground for cavil on the part of the advocates of the enlargement.

This pamphlet is ascribed, by a writer under the signature of S. in your paper of the 4th, to Mr. Johnson. The estimate last year is assumed by this writer, as applicable to the same routes with the one above mentioned, *notwithstanding an express declaration to the contrary*, in pages 7 and 8 of the pamphlet above alluded to, and is made the foundation of a charge of "inconsistency, and medley of folly and ignorance" in the estimates of Mr. Johnson. With what propriety this charge is made against Mr Johnson, the public will judge by the above statement and following extract from Oswego, pages 6, 7 and 8. After speaking of "the cost of making the proposed enlargement from Albany to Buffalo, 353 miles, estimated by the Engineers in the service of the State at $12,416,150, *exclusive of land damages*" and a number, of difficulties of a serious and expensive character, Oswego observes—"The question may now be asked, how are these difficulties to be avoided? We answer, by opening an entire new channel from the Hudson to lake Erie, by the way of Lake Ontario.

"The total extent of artificial canal required on this route—if along the valley of the Mohawk—through Lake Oneida, the Oneida and Oswego Rivers be adopted, is only 150 miles of artificial navigation, while by the Erie Canal it is 353 miles, making a difference of 213 miles of canal—or, if the route via Syracuse to Oswego be taken, &c a saving would still be made of nearly 170 miles of artificial canal.

"The expense of opening a navigation on this latter route, having a depth of water of not less than *eight* feet, with a width of surface of *ninety feet, which is as small a width as should be allowed for that depth*, will not by the most liberal computation exceed eleven millions of dollars, to wit: 5½ millions from the Hudson to Utica, 3½ millions from Utica to Lake Ontario, and 2 millions from Lake Ontario to Lake Erie, around the Falls of Niagara." J. E. B.

ESTIMATES OF EXPENSE, ANNUAL DISBURSEMENTS AND INCOME OF PENOBSCOT RIVER RAILROAD, BETWEEN BUCKSPORT AND OLD TOWN, MAINE.

An Act to establish the P. R. R. R. Corporation, passed March 15, 1836.

The 1st section provides that, said Corporation shall have all the "powers and privileges, and be subject to all the liabilities" in the Statute of February 16, 1836, concerning Corporations, and in the Statute of March 1, 1836, concerning the "rights and duties of railroad corporations," and may "construct a railroad from any place at or near the tide waters of Penobscot River in the town of Bucksport, to and through the towns of Orrington, Brewer, Eddington and Bradley, and into the town of Milford to the shore of Penobscot River, and across the same to the western bank thereof, at or near that part of Orono, called Old Town, with the right to extend a branch of said railroad from any point of its location in Brewer to any point or place at the shore of Penobscot River at or near the city of Bangor, and from said branch on the eastern shore of Penobscot River in the direction to Old Town to the main railroad, and also another branch in Bradley from any point of the main railroad to the shore of Penobscot River at or near Lower Stillwater in Orono.

2d Section provides for not less than 2500 nor more than 4000 shares of $100 each, and that each proprietor may give as many votes, in person or by proxy, as he holds shares, provided they do not exceed $\frac{1}{10}$th part of the whole number—and that there may be not less than 5 nor more than 9 directors.

3d Section authorzes the directors to execute the powers granted for locating and making the railway, laying assesments, &c. —and authorizes the Treasurer, after giving 60 days notice, to sell any share of a delinquent proprietor,—and subjects such proprietor to the payment of balance due, if any after his share shall have been sold.

4th Section authorizes the Directors to establish the tolls—with a provisio that after 10 years from the completion of said railroad, when the tolls shall exceed 12 per cent. per annum on the actual cost of said railway "after deducting all necessary disbursements in concluding its operations," the Legislature has the right to reduce the tolls, so that the nett income shall not exceed 12 per cent., and to enable the Legislature to do this, annual returns are to be made to the Governor and Council of the expenses and income.

5th Section empowers the Directors to erect toll houses, establish gates, appoint toll gatherers, &c.

6th Section provides for the punishment of any one who may wilfully injure the railway, &c.

7th Section makes it the duty of the Directors to make an annual return as required by Sec. 4th.

8th Section requires that 2500 shares shall have been subscribed for, the corporation organized, and the location of the road filed with the County Commissioners of the County where the lands are taken for that purpose, and with the Governor and Council previous to 1st day of January, 1838, and the railroad to be completed before the 1st day of January, 1841, or the act to be void.

9th Section requires the corporation to erect and keep in repair all bridges with their abutments and embankments, which it may be necessary to make over any canal, turnpike, or other highway.

10th Section authorizes the building of a bridge over Penobscot River at Old Town.

11th Section repeals, as to this corporation, the provisions of an act passed March 17, 1831, concerning corporations, which authorizes the Legislature to amend, alter, or annul any charter at their pleasure.

12th Section makes it the duty of the corporation to carry the United States Mail for a reasonable compensation, when required by the P. M. General.

For the additional rights and duties of said corporation, reference must be had to the general laws referred to in Sec. 1.

The *Penobscot River Railroad Corporation* was duly organized on the 22d day of April, 1836, by choosing

SAMUEL M. POND, of Bucksport, President.
JOSEPH R. FOLSOM, of Bucksport.
JOHN N. SWAZEY, of "
HENRY DARLING, of "
SAMUEL LITTLE, of "
HENRY SILSBY, of "
MOSES G. BUCK, of "
WM. S. BRIDGE, of Milford.
JOHN D. WILSON, of Brewer.
} Directors.

A. D. DARLING, Sec. and Treasurer.

Books for the subscription for stock, have been opened at Bucksport and Orono, and more than 1000 shares had been subscribed for on the 24th of Sept., 1836, and within a few days after the abandonment of the making a railway on the west side of Penobscot River from Bangor to Old Town, by virtue of a charter to Rufus Dwinal and others. On that event, the attention of the people in Orono was immediately turned to the P. R. R. R. Corporation, and at a large and highly respectable meeting of the citizens of Orono, held at the village of Lower Stillwater, a committee was chosen to confer with the Directors of this Company, and ascertain what had been done, and was being done, to locate and construct the railroad on the eastern side of P. River. This conference resulted in an arrangement that the people in Orono should take an equal share in the stock, and that further surveys should be made during the present season —the road commenced early the ensuing spring, and be completed as soon as practicable.

A railroad on the eastern side of Penobscot River, as provided for by said act of incorporation, will better accommodate lumber dealers on said river, than any other can do—its lower termination being at Bucksport, which contains a harbor open to navigation at all seasons of the year, where extensive wharves can easily be built, and a large depot obtained for piling lumber, the latter without expense to the company. The Engineer's report of this route is extremely favorable, that the ground is very level, and suitable for the construction of a railway. There will be no deep cuts or high embankments necessary on the route. From Bucksport to Orrington there is a great variety and abundance of cedar and timber suitable for the building of the road, and which can be had very cheap. He also reports that the road could be built on the plan of the Hamburg and Charleston* Railroad for less than $3000 per mile, and recommends that mode of making it.

The right of way has already been conveyed, in many instances, by the owners of lands over which the railway will be made, and will be generally conveyed through the whole route, free of any claim for damages, and in no case can the damages be to any considerable amount.

The corporation having, by the arrangement before alluded to with the people of Orono, secured the co-operation, interest, and influence of a large proportion of those concerned in the lumber business on the P. River, and having ascertained the number of mills in Orono and Milford, and the average quantity of lumber sawed by them, and the probable amount of timber that will be transported on the railroad to Bangor and Bucksport, are prepared to make a probably accurate estimate of the cost of the railroad, with the annual expenses and income thereof. By reason of the very favorable ground for the proposed route, and the abundance of materials on the spot suitable for the construction of the road, Col. Prescott estimated the cost of the railroad, on the plan he recommended, at the sum of $229,000 only. But suppose the railroad to be built in a different manner, and to cost $100,000, and that the *annual expenses* will be

Laborers, Agents and Clerks,	$24,000
Repairs and fuel, 10 per cent. on cost,	40,000
Engineers,	3,000
	$77,000

The annual income may, with much certainty in regard to the income from the transportation of lumber, be estimated as follows, viz: 38 saws on the east side of P. River near Old Town, each of which will cut 800,000 feet per ann., say 30 millions feet of lumber —

20 millions of which sent to Bucksport, at $2,25 per M., is	$45,000
10 millions of which sent to Bangor, at $1,50 per M., is	15,000
33 saws at upper and lower Old Town and Great Works which average a like quantity, making 26 millions—	
13 millions sent to Bucksport at $2,25 per M.,	29,000
8 millions sent to Bangor at $1,50 per M.,	12,000
76 saws at and near lower Stillwater, in the whole, say 60 millions—30 millions of which sent to Bucksport at $2 per M.,	60,000
20 millions of which was sent to Bangor at $1,25 per M.,	25,000
Tolls on clapboards, shingles, laths and staves, estimated at	10,000
Wood and bark to Bangor and Bucksport, estimated at	8,000
400 passengers weekly, at an average of $1 each,	20,800
15,000 tons of goods, including corn, flour, salt, pork, coal and fish, from Bucksport to Orono and above at $2,	30,000
5,000 tons of goods to Bangor when river is closed with ice,	10,000
	$264,800
Deduct expenses,	$77,000

and it leaves a nett increase of $187,800

which is nearly 50 per cent. on the capital. But lest we should overrate the profits, we will suppose the railroad to cost $500,000; that the annual expense will be 25 per cent. more than before estimated, and will amount to $96,250, and the income 35 per cent. less, or only $198,700, from which deduct expenses, and we shall have left $102,350, or more than 20 per cent. on the capital. It ought also to be borne in mind that railroads have generally, if not universally *paid better*, and had *more business* than have been anticipated—the great facilities they afford for the transaction of business, and at reduced prices, serves to increase its amount.

To those who are not acquainted with the damage done to boards by rafting them and running them over falls, it may be thought improbable that lumber will be transported on a railroad, at an expense of $2. per M., when it can be rafted and run in the river for much less money. To such persons we can state that, the mill owners and lumberers estimate the damage to boards in *splits, gravel and mud*, occasioned by running them, at more than $2 per M. Add to this the total loss of a great many boards, and the expense of rigging, and men to look after the rafts at their place of deposit until they are shipped (to say nothing of the trouble and vexation of rafts being broken and the boards being mixed with other lots) and also the expense of rafting and running, and it will amount to $1 per M. more, at least—so that we may safely say, that it costs at least $3 per M. (including the injury to the lumber) to raft it. This is $1 per M. more than it will cost to run it on the railroad—by which mode of transportation the damage from splits and dirt would be saved—and the lumber be deposited on a wharf in perfect order for shipping, or for use. Boards in this condition, and in consequence of not having been in the water, would be actually enhanced in value, and command a much higher price, probably *not less than $2 per M.* By this calculation (and it is believed to be a fair one) it will be seen, that there will be a saving of from $2 to $3 per M. to the owners of lumber, by the railroad. This alone would be sufficient to build half of the railroad new every year. If this estimate be correct, we cannot doubt that *every board* will be transported by railroad, rather than a part only, as set down in the foregoing estimate of the income of the railroad. No one will ever think of rafting his boards, and as heretofore subject them to the hazard of being split and soiled. Mill owners and dealers in lumber assure us that all their lumber will be sent to Bangor and Bucksport on the railroad. Our highest estimates of the *income* of the railroad may therefore be considered as a probable one. It is believed there is no route for a railroad of the same distance, where, all things considered, a railway could be so cheaply constructed as on the route contemplated for the P. R. R. Road, and that there is no one in New-England which holds out so good a prospect of *great profits*. Any one desirous of taking stock in said corporation, and wishing to obtain further information, may apply personally or by letter to Samuel M. Pond or Joseph R. Folsom of Bucksport, John Bennock or Ebenezer Webster of Orono, or of Col. Wright of Milford near Old Town, and any one desirous of subscribing for shares in said corporation, are hereby informed that subscription books are opened, and will be

* The Charleston Railroad was built for less than $5000 per mile.

found with Joseph R. Folsom at Bucksport, and Ebenezer Webster of Orono.

Since the above and foregoing statement was made, a report of J. B. Sargent, Esq., Engineer of the Hudson and Delaware Railroad has been seen and examined, from which it appears that that railroad is 38 $\frac{2}{10}$ miles in length, and is estimated to cost per mile, including graduation, superstructure, land, depot, buildings, carriages and machinery, &c., $10,714.30. The plan on which that railroad is recommended to be built, presents a graded surface of 20 feet clear of ditches, with slopes of one to one in excavations, and one and a half to one in embankments. This will give ample room for two tracks of 4 feet 9 inches in the clear, each. The superstructure will have two continuous and parallel lines of sills composed of white pine 4 by 9 inches, and not less than 14 feet long, each. These sills are to be imbedded in trenches sunk in the graduation so that the upper side of them will correspond precisely with the grade of the road. Transversely to these, ties will be placed every 3 feet, measuring from centre to centre, and must be 7½ feet long, and 6 by 6 inches square, of cedar. Notches of 2½ inches deep to receive the wood rail must be made in the ties, and a spike then driven in to secure the tie to the sills, and guard against lateral pressure. In the notches of the ties will be placed the wood rail, and be secured by cedar, locust, or white oak wedges. The rail to be composed of Norway pine, and be in lengths of 18, 21, 24, 27 and 30 feet, and 6 by 6 inches square—the whole to be surmounted by one iron plate rail 2½ by $\frac{5}{8}$ inches which must be firmly spiked to the wood rail, and underlaid at the joints by connecting plates. The horse path to be formed of materials from the side of the road, and slated or gravelled as the material is most convenient. The plan of this road is calculated for an additional track when the demands of business may require it.

The estimated annual receipts from passengers, wood, timber, stone, butter, pork, live stock, grain and vegetables, pressed hay, lime and iron *from* the interior—and gypsum, salt and other merchandize of various kinds *to* the interior, are $78,950.

The estimated annual expense is	
5 per cent. on the perishable part of the superstructure,	$6,000
10 per cent. on the cost of cars, engines, &c.,	3,000
Superintendance, repairs, fuel, &c.,	16,000
	$25,000
Leaving the nett income annually of	$53,950

or more than 13 per cent. on the cost.

In comparing the sources of the income with the estimate for the P. R. R. Road it will be perceived that the principal article of transportation on the latter is *boards*,—of which there are none on the former—and the receipts for carrying gypsum, salt and merchandize are only estimated at $12,250—much less than the probable amount of receipts from carrying merchandize on the former from Bucksport to Bangor and above. Let it be observed also, that the plan of making the H. and D. Railroad is the one upon which the P. R. R. Road will probably be built; and at the expense estimated for the other, $10,714 30 per mile, will amount only to $305,257 55, estimating the length of road at 28½ miles. Taking this sum as the probable cost of the P. R. R. Road, and make an estimate of the annual expenses upon the same basis as Mr. Sargent has made for the other railroad, and the result will be—

5 per cent. on perishable part of structure for road of 28 miles,	$4,422
10 per cent. on cost of cars, engines, &c.,	3,000
Superintendance, repairs, fuel, &c. &c. at same (though repairs will be less on account of the length of way being less,)	16,000
	$23,422

Not one-third the amount of former estimate, and will leave the amount of nett income annually $241,480—which is more than 79 per cent. on the cost, at $305,257 55.

Can there be any doubt that the stock in the Penobscot River Railroad Corporation will be the *most profitable* stock in the *State*, or perhaps in the *nation?*

But as it will be important for the community that boards should be furnished at the lowest prices for which they can be afforded, it will be now shown that the price for transportation can be greatly reduced, (although we have shown that the lumber owners are great gainers by giving the toll mentioned in the former estimate for transportation on the railway compared with the transportation by water as now,) and still leave the income of the P. R. R. Road a very great profit to the stockholders during the first ten years. As railroads increase, and more experience is obtained as to the mode of making them, it is ascertained that the expenses of them is constantly diminishing. The Engineer of the Tioga Railroad in Pennsylvania, Wm. Matthers, Esq., has recently made a very minute estimate of the expense of making that Railroad, a distance of 27 miles, according to the method pursued by the Baltimore and Ohio Railroad Company, for some years past—of course a mode that has resulted from the *experience of years*;—(and Mr. Matthers' estimate has been approved and confirmed by a consulting Engineer, Benj. Wright, Esq.) and they make the expense of the graduation of the road, bed and masonry for the whole length (nearly as long as the P. R. R. Road,) $108,443 83. The superstructure of the road (including even the spikes and small nails) at $107,044 20—adding the expense of road crossings, turnouts and fixtures, and for contingencies at 10 per cent. on other expenses, $22,318—making the whole expense $237,806 03, which is at the rate of $9,181 73 per mile. The Engineer then adds for 2 locomotive engines with tenders, at $3,500 each, $7,000—50 transportation cars at $148 each, $7,400—5 passenger at $450 each, $2,250—depots, water stations, car houses, &c., $3,500, $19,750—making the whole expense to the commencement of its operations $257,556 03. It appears also from Mr. Matthers' report that a portion of the Tioga Railroad is already contracted for at a less sum than the estimate. In the Engineer's estimate nothing is put down for the damages to the owners of land, and the expense of fencing, but Mr. Matthers says, "It is not likely from the disposition generally manifested that these damages will materially swell this estimate, for full two-thirds of the owners have liberally relinquished all claim for damages." The charter of the Tioga Railroad allows only 2 cents per ton per mile for toll, as the maximum toll—and even at this low price, it is estimated that the income from the toll of that article alone, will be sufficient to pay 6 per cent. on the investment.

If we take the above estimate as the probable expense of the P. R. R. Road—and be it remembered that the route of the latter is straighter and more level than the other—and therefore it may fairly be considered as a liberal estimate—the expense for 28½ miles will be $271,864 66. Let us then take this estimate as the probably correct one, and reduce the toll in the former estimate of income as follows:

To Bucksport 33 millions feet boards from upper and lower Old Town Great-works at $1 50 per M.,	$49,00
To Bucksport 30 millions feet boards from lower Stillwater at $1 40 per m.,	42,000
To Bangor 18 millions feet boards from Old Town at $1 per M.,	18,000
To Bangor 20 millions feet boards from Lower Stillwater at 75 cts. per M.,	15,000
Tolls on clapboards, &c.,	8,000
Tolls on wood, &c.,	6,000
400 passengers weekly at $1,	20,800
15,000 tons of goods, &c. from Bucksport to Orono and above at $1 50 per ton,	22,500
5000 tons of goods, &c., from Bucksport to Bangor during the winter, &c., at $1 25 per ton,	6,250
Amounting in the whole to	$187,550
Annual expense as per estimate on page 8th, in accordance with Engineer's estimate of Hud. and Del. Railroad.	23,422
Leaving as the nett income annually,	$164,138

or more than 60 per cent. on cost of railway, &c.

Should a larger proportion of the lumber be sent to Bangor than is estimated or even the whole quantity sent to Bangor and Bucksport, be 25 per cent less. than the estimate, the nett income would still remain large—but if it be a fact (and there appears no good reason to doubt it) that boards can be taken on the railroad at the low rates in this last estimate, the quantity instead of being diminished, would be greatly increased, and consequently much larger dividends be received by the stockholders.

REPORT OF THE PRELIMINARY SURVEY OF THE ROUTE OF THE HUDSON AND DELAWARE RAILROAD, BY JAMES B. SARGENT, ESQ., CIVIL ENGINEER, MADE TO THE COMMISSIONERS OF THE ROAD AND PUBLISHED UNDER THEIR AUTHORITY.

TO THE COMMISSIONERS OF THE HUDSON AND DELAWARE RAILRAND COMPANY.

GENTLEMEN,—In furtherance of the duties devolved upon me by my appointment of engineer to conduct the surveys and examinations of that district of country through which it is proposed to construct the Hudson and Delaware Railroad, I have the honor to submit the following Report—and although fully aware that the character of these surveys are such as will admit of my presenting a delineation and description of the best route that the generally favorable features of the country will allow—still the preliminary examinations have been made with much care, the topographical features extensively viewed, and as carefully considered and sketched as was deemed necessary to prove the practicability of the route, and exhibit a site that will admit of the construction of a railroad on the most approved plan, and at comparatively small expense.

To establish a definitive location was not the design in the commencement, nor does the present object, however desirable to attain and necessary to the ultimate completion of the work, require it—yet it is hoped that sufficient data have been collected, and ample deductions made therefrom, to show that the curves will be easy, the grades light, and all the circumstances usually attendant upon works of like magnitude, in the highest degree favorable and gratifying.

But if these facts are interesting in themselves and conclusive evidence of the utility and advantage of hastening the completion of the work, the peculiar and favorable circumstances under which it can be commenced, and the abundant support that the company will necessarily derive from its commanding location, are considerations still more cheering and vastly more important to the company and a numerous and wide spread community.

The Hudson and Delaware Railroad in New-Jersey may properly be considered (what it is designed to be in effect) a continuation of a road of the same title in the State of New-York. The proposed line of the latter commences at Newburgh on the Hudson river, and terminates at the New-Jersey line in the valley of the Wallkill,—that of the former was commenced at the termination of the latter, and pursues, first, the valley of the Wallkill,—second, that of the Pepo Coton to the summit dividing the Hudson and Delaware rivers, near Augusta—and thence down the Paulins Kill to near Columbia on the Delaware river. From Columbia the line is continued up the same through the Water Gap to opposite Dutot's Island, the place proposed for crossing the river with the Susquehannah and Delaware railrord.

The charter of each of the three railroads, mentioned above, grants to the respective companies the privilege of uniting their interests and combining their means for the purpose of effecting a continuous line of communication between the Hudson and Susquehanna rivers, upon such terms and in such manner as the contracting parties shall agree. The two extreme roads between which the one we are treating of is to form so important a link, have already passed the odeal of uncertainty and doubt in regard to their utility, rapid progress, and early completion.

That in the State of New-York is being prepared for vigorous prosecution under my supervision, and I am well aware that the holders of the stock fully appreciate the importance of the road across New-Jersey, and will be disposed at any time to enter into liberal and extensive arrangements for the promotion of the present and future interests of both; that they deem its importance to themselves coeval with that of their own, and a union of facilities and interest both in constructing and in using them when completed, of paramount importance.

That in Pennsylvania, it is understood, will be vigorously prosecuted during the ensuing season. Extensive preparations for it are making, and those most intimate with the circumstances of the company, and largely interested in its success, have entire confidence in its early completion.

A map of the country traversed by the survey, together with a profile of the line, are respectfully submitted, and will exhibit a route very nearly upon the ground most approved for the construction of the work, except in three instances, where it deviates from the immediate course of the vallies and encounters high and broken ground. These deviations are objectionable and should not be adopted; although, it is admitted, that the road upon them would better serve the immediate and adjoining districts than it will or can upon the low ground: but to adopt them would be to add greatly to the rise and fall of the whole route, and thereby to detract from the useful effect of the motive power, and to add to the cost of traction, which would be a serious injury to the main object. These routes were surveyed to the exclusion of those pursuing the course of the streams, but the latter were known to be in the highest degree favorable, and it therefore became a matter of policy and economy to settle the question in regard to the practicability of those most desired by the inhabitants, and of doubtful character. The dotted lines upon the map, and the lower ground surface upon the profile will give an approximate representation of the line prefered, and in the description of the line, we shall refer to each of them separately and in their proper places.

DESCRIPTION OF THE LINE.

In order to render this part of our subject convenient for reference, and to embody in a condensed form as much information as possible, the line will be divided into seven sections, and observations made upon each separately

SECTION NO. I.—6 MILES 3320 FEET LONG.

From the New-York Line to Deckertown

This section includes the first and most important of the lines that are deemed inadmissible. It commences at Kimble's Point on the line between New-Jersey and New-York and was traced along the high lands that bound the Wallkill passing in front of Mr. Chandler's farm house, near to Wantage chapel, in front of Mr. Wilson's house, and on a line nearly parallel with, and but a short distance south of the road leading from Unionville to Deckertown, to the latter place where it enters the village, and the valley of the Wallkill, just south of the academy.—Upon this line an elevation of 132½ feet above the starting point is attained which leaves the descent to Deckertown 117 feet, and will require on the ascending grades a ratio of 38¾ feet per mile, and in the descending, 36⅓ feet per mile. But if the valley of the Wallkill had been pursued an almost level grade might have been obtained, and the cutting and filling exhibited on the upper line in a great measure avoided. It is true that the distance would be somewhat increased, but it is believed that when the line shall be accurately and carefully located the aggregate distance on the lower route will not materially exceed that stated for the upper and present survey.

SECTION NO. II.—8 MILES, 1930 FEET LONG.

From Deckertown to Augusta on the Paulins Kill.

This section embraces that portion of the line that pursues the valley of the Pepo Coton. That stream has its source near to Augusta and the course of the Paulins Kill, and forms a broad and spacious valley to its junction with the Wallkill, half a mile west of Deckertown. The line continues on the north side of the stream and upon the flats to near its source. Thence it bears more north and touches the spurs of the high lands that project across its direction, and passes on to the summit between the Pepo Coton and the Paulins Kill, or as before remarked between the Hudson and Delaware rivers. It passes the Mascote creek at Deckertown, and comes in contact with, and runs a short distance in, Mr. Obadiah Pellet's mill pond, but no where encounters any serious obstacles. The excavations will not be heavy, and in every instance through no harder substance than loam and gravel.—The embankments will be light, and the water can be so concentrated as to render the drainage under the road effectual and cheap. In short, it would be difficult to select a site for a railroad that possesses more general advantages.

SECTION NO. III.—8 MILES 3500 FEET LONG.

From Augusta to Theophilus Hunt's Mills,

Enters with its commencement into the valley of the Paulins Kill and almost immediately after into a narrow, winding and rocky valley that passes through a spur of the highlands and returns again to the Kill about 1¼ miles below Augusta. This line was surveyed but not proffered. The Kill here is circuitous but presents wide and favorable flats: they are therefore considered the proper place for the road, and its adoption will not materially change the distance from what is now given. These flats continue about 2½ miles below Augusta where the stream becomes closely bound by bold and rocky shores that extend for some distance below Balesville, and render it necessary in several instances to encroach upon the stream and to pass it twice at Balesville. After passing down about half a mile below Balesville, the valley becomes less rocky and more favorable, but still quite sinuous, and the stream is again crossed at Mr. Roof's and closely followed to the Widow Cassady's property. Here the line diverges towards the north and follows an elevated valley through Mr. Lane Emmon's property, and returns again to the Kill at Theophilus Hunt's Mills and presents the third and last of the lines surveyed that are deemed objectionable. It attains an elevation above the flats at the widow Cassady's of 73 feet, and of 94 feet above them at Mr. Hunt's Mill's, and requires grades of 35¼ feet per mile in ascending and of 38½ feet in descending—thus showing that the actual increase of rise and fall that would be incurred by adopting the upper route is 152 feet, and that the ratio of grade must necessarily be more than trebled.

The route following the immediate valley of the Kill is therefore deemed much the best and although it will occasionally come in contact with points of the lime rock and strata of slate that appear along the stream, there will be no serious or prominent obstacles to be encountered, no abrupt curvature, nor great indirectness of course required.

SECTION NO. IV.—5 MILES 2400 FEET LONG

From Theophilus Hunt's Mills to Marksborough.

After passing Mr. Hunt's mills the hills recede upon both sides of the stream and exhibit the beautiful and fertile valley so favorably known as the Stillwater flats This fine range continues for some distance below Stillwater and affords all the advantages desirable for the cheap construction of a durable and excellent road. In fact the whole of this section may be said to occupy a favorable and uninterrupted valley, although the windings of the stream render it necessary to cross it no less than seven times in order to preserve as much directness of the line as possible: but the bridging cannot be considered objectionable, as the stream does not rise very high, and can in the most instances be crossed at such elevations as shall be deemed necessary to secure the bridge against injury from the floods.

SECTION NO. V.—6 MILES 120 FEET LONG.

From Marksborough to Mr. Jones' farm.

This Section terminates the course down the immediate valley of the Paulins Kill, which as far as Paulina is circuitous, narrow and closely bound by high and prominent shores. The line crosses the Kill six times, and by so doing in a great measure avoids the indirectness of it, and the points of rock that appear frequently on the face of the hills. From Paulina to the termination of the section the line passes over more favorable ground—indeed from the vicinity of Gravel Hill to Mr. Jones' the valley is equal in uniformity and fertility to the Stillwater flats, and the Kill is not again encountered nor any stream of importance passed, except Mill Creek at Gravel Hill. The excavation upon this section, except when some little rock may be encountered, will be loam and gravel, the best of materials to form the banks and the easiest to excavate. The grades will no where exceed 20 feet per mile, and the curvature in every instance favorable for the operations of locomotive steam engines.

SECTION NO. VI.—5 MILES 3400 FEET LONG.

From Mr. Jones' to opposite Columbia.

At Mr Jones' the Paulins Kill turns abruptly south, while the line continues its direction and ascends with a grade of 10½ feet per mile upon the flats in front of Mr. Vanscoder's, passes over a considerable valley and encounters a cut of about 20 feet previous to reaching the property of Squire Bartow, thence across a small stream and wide ravine near his house and on over very undulating table land to the wide and deep valley near Sodom which it crosses, and then pursues a much more favorable site to the termination of the section.

This section appears rough upon the profile but will not be very expensive, as the excavations will be generally through loam and gravel and will be about sufficient to form the embankments and are so distributed that they can be used for that purpose to great advantage. But above all it will afford a very straight road, light curvature and grades of less than 12 feet to the mile.

SECTION NO VII.—4 MILES 3680 FEET LONG

From Columbia to opposite Dutot's Island.

The whole of this section lies along the Delaware river and is circuitous, having to form a large circuit around the high bluffs of the Blue mountains, that project to the south and almost at right angles to the line pursued upon the table lands back from the river, in order to avoid deep rock excavation and to enter favorably into that narrow pass in the mountain, so well and generally known as the Water Gap, and so conspicuous for its bold and lofty scenery.

The grades are here necessarily heavier than any descending to the west upon other parts of the line, being 27⅝ feet per mile, descending from the table land to a suitable elevation for passing the Gap, crossing the river and connecting with the proposed route of the Susquehanna and Delaware Railroad.

It will be necessary to incur the most expense, however, on the first mile of the section and in the vicinity of Columbia; the ground there being broken and requiring heavy excavations and embankments. But after the line gets down to the flats they are of sufficient width, with one or two exceptions, to admit of the construction of a cheap and durable road.

A succession of Islands are formed in the river from opposite Snyder's Water Gap Hotel to Dutotsburgh, which present a favorable site for one or both of the proposed roads, and may upon a more full investigation of the subject be found advantageous ground to form a connection between them.

The length of each grade and the ascent or descent per mile in the same upon the whole line is given on the profile and will exhibit the maximum grade at 34½ feet per mile if the routes recommended are adopted; and this need only be had in ascending the summit at Augusta—all the rest being less than 30 feet per mile.*

OF THE PLAN OF THE ROAD.

In entering upon this part of our subject, it may be proper to remark that the plan proposed for the road through Orange County presents a width of road bed of twenty feet, and is designed to give ample space for two tracks of four feet nine inches each in the clear, but it is designed to put only one of them down, until the business of the road is fully tested, and it is ascertained that the one is insufficient to perform it.

The plan of the superstructure and width of track in New-Jersey should correspond with that in New-York. But it is believed that a single track, with suitable turns out and sidelings, will be capable of performing the business that will accrue to the road for a series of years, and it is therefore recommended that a width of road bed adapted to a single track, be adopted. This will require a graded surface of 15 feet clear of ditches, and the cuttings in excavations of earth should have slopes of 1 to 1, and the embankments of 1½ to 1 in all cases.

The superstructure will very nearly correspond with that upon the principal roads in New-Jersey, New-York and Pennsylvania, which has been tested with a hundred other and different plans, and is now most generally approved and adopted. It will have two continuous and parallel lines of sills composed of white pine 4 by 9 inches and not less than 14 feet long each. These sills should be imbedded in trenches sunk in the graduation so that the upper side of them will correspond precisely with the grade of the road. Transversely to these ties will be placed every three feet measuring from centre to centre. The ties should be seven and a half feet long, and 6 by 6 inches square, and of chesnut, white oak, or white cedar timber; also have notches of 2½ inches deep to receive the wood rail and the spike for securing it to the sills, and guarding against lateral pressure. In the notches of the ties will be placed the wood rail, and be secured by red cedar, locust, or white oak wedges. The rail to be composed of Norway pine, and be in lengths of 18, 21, 24, 27, and 30 feet, and 6 by 6 inches square. The whole to be surmounted by an iron plate rail 2½ by ⅝ inches, which should be firmly spiked to the lower rail and underlayed at the joints by connecting plates of iron or zinc. The horse path to be formed of materials from the sides of the road, and slated or graveled as the material is most convenient.

(To be Continued.)

*The highest elevation attained above the New York state line is near Augusta and is equal to 143 feet. The descent from that point to the Delaware River at the Water Gap is 251½ feet. Making the actual rise and fall to overcome 395½ feet.

RAILROAD MEETING.

Agreeably to previous notice, a meeting was held at the house of William McFarlan, in Whippany, on Friday the 14th inst. to take into consideration the expediency of constructing a Railroad from Orange, across the mountain, through Livingston, Hanover and Whippany, to some point on the Morris canal. When Silas Tuttle was chosen Moderator, and Caleb H. Ely, Secretary.

1st. Resolved, That it is feasible and expedient to construct a railroad from Orange, across the mountain, through Whippany to some point on the Morris Canal.

2. That it is necessary to ascertain the probable amount of produce and passengers that will pass on said road when constructed, and that a committee of five be appointed to ascertain that fact, and report the same at an adjourned meeting. That William Scott, N. P. Thomas, Joseph Jackson, Andrew B. Cobb, and Caleb H. Ely, compose the said committee.

3d. That a committee of seven be appointed to explore the route and employ an engineer to ascertain the probable amount of cost to construct said Railroad, and that Enoch Edwards, Philo Andrews, Pell Teed, Jeremiah Mitchell, Jonathan S. Williams, Ichabod Condit, and Stephen D. Day, constitute said committee.

4th. That this meeting stand adjourned to Monday the 31st Oct. to meet at the house of William McFarlan in Whippany, at one o'clock, P. M. at which time said committees are requested to meet and make their respective reports.

5th. That the editors of the Newark Daily Advertiser, the Sentinel of Freedom, and the Jerseyman, at Morris Town, be requested to publish the same, and that the above proceedings be signed by the Chairman and Secretary.

SILAS TUTTLE, Chairman.
CALEB H. ELY, Secretary.

From the London Mechanics' Magazine.

NEW RESOLUTIONS ON RAILWAY BILLS.

The House of Lords having on Wednesday last adopted these resolutions as sent up from the House of Commons, without amendment or alteration, we lose no time in publishing the following authentic copy of them. They will be found of a very stringent and, on the whole, salutary nature:—

Amended Standing Orders for next Session.

1. That when any application is intended to be made to the House for leave to bring in a Bill for making any railway, ro

for varying, extending, or enlarging any railway already authorised to be made, or for continuing or amending any Act passed for any of those purposes, or for alteration of the existing tolls, rates, or duties upon any such railway, notices of such intended application be given.

2. That such notices (except as hereinafter mentioned) do contain the names of the parishes and townships from, in, through and into which any such railway is intended to be made, varied, extended, or enlarged, and if an alteration in any existing tolls, rates, or duties, is intended to be proposed, the intention of proposing such alteration be expressed therein. But in case any such Bill shall be for the purpose only of altering any existing tolls, rates, or duties, or of continuing or amending any former Act, solely for the purpose of tolls, it shall not be necessary to insert in such notice the names of the several parishes and townships.

3. That such notices be inserted three times in the months of August, September, October, and November of this year, or either of them, in some one and the same newspaper of every county in or through which any such railway is intended to be made, or in which such railway, already authorised to be made, is intended to be varied, extended, or enlarged, or if there is no such paper printed herein respectively, then in the newspaper of some county adjoining thereto.

4. That a map or plan and section of the whole of such intended railway, and also of any intended variation, extension, or enlargement of any railway authorised to be made, upon a scale of not less than four inches to a mile, shall be deposited for public inspection at the office of the Clerk of the Peace of every county, riding, or division, in or through which such railway, or such variation, extension, or enlargement, is intended to be made, on or before the 30th day of November next, which map or plan shall describe the line of such intended railway, or of such intended variation, extension, or enlargement, and the lands in or through which the same is intended to be made, together with a book of reference, containing a list of the names of the owners or reputed owners, lessees or reputed lessees and occupiers of such lands respectively, and where such railway or such variation, extension, or enlargement, is intended to pass through any building, yard, or court-yards, or land within the curtilage of any building, or through any ground cultivated as gardens, an additional plan of such buildings, yards, land and ground, and of the said railway, shall be laid down upon a scale of not less than a quarter of an inch to every 100 feet.

5. That such section shall be drawn to the same horizontal scale as the plan, and to a vertical scale of not less than one inch to every 100 feet, and shall show the surface of the ground in the line of railway marked on the plan, and shall also have marked on it a line showing the railway line when finished (which line shall correspond with the upper surface of the rails,) and a datum horizontal line, which datum line shall be the same throughout the whole length of the railway, and shall be referred to some fixed point stated on the section. That a vertical measure from such datum line to the line of the railway shall be marked in feet and inches at each change of the gradient or inclination, and that the proportion or rate of inclination between each such change shall also be marked. That the height of the railway over or under the surface of the ground shall be marked in figures at least twice in every mile, and also at every crossing of a turnpike road, and public carriage road, navigable river, canal, or railway, or juncture with a railway, and that it shall be stated on the section whether any and what alteration in the present level of such turnpike road, carriage road, river, canal, or railway, is intended to be made. That where tunnelling or arching is intended, the same shall be marked both on the plan and the section.

6. That the clerks of the peace, or their respective deputies, do make a memorial in writing upon the map or plan, section and book of reference so deposited with them, denoting the time at which the same were deposited in their respective offices, and do at all seasonable hours of the day permit any person to view and examine the same, and to make copies or extracts therefrom, such person paying for the same the sum of 1*s*. for every such inspection, and the further sum of 1*s*. for every hour during which inspection shall continue after the first hour.

7. That within one calender month from the time when the map or plan and section shall have been deposited with the clerk of the peace, a copy of so much of the said map or plan and section as relates to each parish, through which any railway is intended to be made, varied, extended, or enlarged, together with a book of reference thereto, shall be deposited with the parish clerk of each such parish in England, the schoolmaster of each such parish in Scotland, and the postmaster of the post-town in or nearest to such parish in Ireland, for the inspection of all persons concerned, at all reasonable hours of the day, such person paying for each inspection the sum of 1*s*.

8. That within one calender month from the time when the map or plan and section shall have been deposited with the clerk of the peace, a copy of the said map or plan, section and book of reference, shall be deposited in the Private Bill-office of this House, and that a memorial in writing of the receipt thereof be indorsed by one of the clerks of the said office upon such map or plan, section and book of reference.

9. That before any application is made to the House, for a Bill for making any railway, or for varying, extending, or enlarging any railway already made, previous application in writing be made to the owners or reputed owners, lessees or reputed lessees, by being sent to their usual place of abode in the United Kingdom, or, in their absence, to their agents respectively, and to the occupiers of the lands through which any such railway is intended to be made, varied, extended or enlarged, and that such applications shall be made on or before the 31st day of December next, and that separate lists be made of the names of such owners, lessees, and occupiers, distinguishing which of them upon such application have assented to, or dissented from, such intended railway, or such variation, extension, or enlargement, or are neuter in respect thereof.

10. That before any petition shall be presented to the House for making any railway or for varying, extending, or enlarging any such railway already made, the lists mentioned in the preceding resolution, and an estimate of the expense, signed by the person making the same, and a copy of the subscription contract after mentioned, be deposited in the Private Bill-office of this House, and that the receipt thereof be acknowledged accordingly by one of the clerks of the said office upon such petition.

11. That before any petition is presented to the House for a Bill for making any railway, a subscription to the amount of one-half at least of the estimated expense shall be entered into by persons under a contract, binding themselves, their heirs, executors, administrators, or assigns, for the payment of the money so subscribed.

12. That no such Bill shall be reported to the House until it has been proved to the satisfaction of the Committee, that three-fourths at least of the proposed capital of the Company has been subscribed under a like contract.

13. That no such Bill shall be reported to the House unless provision be made: 1. That no such company shall be authorised to raise by loan or mortgage, a larger sum than one-third of their capital, and that, until 50 per cent. on the whole of the capital shall have been paid up, it shall not be in the power of the Company to raise any money by loan or mortgage. 2. That, where the level of any road shall be altered in making any railway, the ascent of any turnpike road shall not be more than one foot in thirty feet; and of any other public carriage road not more than one foot in twenty feet; and that a good and sufficient fence, of four feet high at the least, shall be made on each side of every bridge which shall be erected. 3. That no railway, whereon carriages are propelled by steam, shall be made across any turnpike road or other highway on the level, unless the Committee on the Bill report that such a restriction ought not to be enforced, with the reasons and facts upon which their opinion is founded.

Amended Standing Orders for subsequent Sessions.

No. 1 and 2 same as No. 1 and 2 for *next* Session.

3. That such notices be inserted twice in the month of February, and twice in the month of March, of the year immediately preceding that in which such application is intended to be made, in some one and the same newspaper of every county, in or through which any such railway is intended to be made, or in which such railway, already authorised to be made, is intended to be varied, extended, or enlarged, or if there is no such paper printed therein respectively, then in the newspaper of some county adjoining thereto. But in case any such Bill shall be for the purpose only of altering any

existing toll, rates, or duties, or of continuing or amending any former Act, such notices shall be inserted three times in the months of August, September, October, and November, or either of them, immediately preceding the Session of Parliament in which such application is intended to be made, in some one and the same newspaper of every county in or through which any such railway is authorised to be made; or if there is no such paper printed therein, then in the newspaper of some county adjoining thereto.

4. Same as No. 4 for next Session, except that the plan must be deposited "on or before the 1st day of March, in the year immediately preceding that in which such application is intended to be made."

5. Same as No. 5 for next Session.

6. That parties desiring to make any alteration in the line of any railway, the plans for which shall have been deposited, and the notices for which shall have been given as before-mentioned, shall be permitted so to do, provided no one deviation shall exceed one mile in length, and provided a plan and section of such alteration, together with a book of reference thereto, shall be deposited with the clerk of the peace, and a plan and section so far as relates to each parish, together with a book of reference thereto, with the parish clerks of the several parishes in which such alteration is intended to be made, on or before the 30th day of November, in the year immediately preceding that in which such application is intended to be made, and that the intention to make such alteration shall be advertised in manner before directed, twice in the month of September, twice in the month of October, and twice in the month of November, and that personal application shall be made to the owners or reputed owners, lessees, or reputed lessees or in their absence from the United Kingdom to their agents repectively, and to the occupiers of lands through which any such alteration is proposed to be made.

7. That parties desiring to make an application for a Bill to vary, extend or enlarge, any line of railway, for making which an Act of Parliament shall have been passed, shall be permitted so to do, provided that no one deviation shall exceed one mile in length, and provided a plan and section of such variation, extension, or enlargement, together with a book of reference thereto, shall be deposited with the clerk of the peace; and a plan and section, so far as relates to each parish, together with a book of reference thereto, with the parish clerks of the several parishes in which such variation, extension, or enlargement, is intended to be made on or before the 30th day of November, in the year immediately preceding that in which such application is intended to be made, and that the intention to make the application for such variation, extension, or enlargement, shall be advertised in manner next before directed, in September, October, and November; and that personal application shall be made to the owners or reputed owners, lessees or reputed lessees, or, in their absence from the United Kingdom, to their agents respectively, and to the occupiers of the lands through which any such variation, extension, or enlargement, is proposed to be made.

8. That parties desiring to renew (in the then next ensuing Session) any application to Parliament in respect of any railway, the plans for which shall have been deposited, and the notices for which shall have been given, as before directed, shall be permitted so to do, provided that no one deviation shall exceed one mile in length, and provided a plan and section of such railway, together with a book of reference thereto, shall be deposited with the clerk of the peace; and a plan and section, so far as relates to each parish, together with a book of reference thereto, with the parish clerks of the several parishes through which such railway is proposed to be made, on or before the 30th day of November, in the year immediately preceding that in which such application is intended to be made, and that the intention to make such application shall be advertised in manner next before directed, in September, October, and November; and that personal application shall be made to the owners or reputed owners, lessees or reputed lessees, or, in their absence from the United Kingdom, to their agents respectively, and to the occupiers of the lands through which any such railway is proposed to be made.

Nos. 9, 10, 11, 12, 13, 14, 15, and 16 same as Nos. 6, 7, 8, 9, 10 11, 12, and 13, of standing orders for next Session.

13. That before any petition shall be presented to the House for making any railway, or for varying, extending, or enlarging any such railway already made, the lists mentioned in the preceding resolution, and an estimate of the expense, signed by the person making the same, and a copy of the subscription-contract after-mentioned, together with a statement of any alterations from the book of reference which may have arisen since the same was deposited, be lodged in the Private Bill-office of this House, and that the receipt thereof be acknowledged accordingly by one of the clerks of the said office upon such petition.

14. That before any petition is presented to the House for a Bill for making any railway, a subscription to the amount of one half at least of the estimated expense shall be entered into by persons under a contract, binding themselves, their heirs, executors, administrators or assigns, for the payment of the money so subscribed.

15. That no such Bill shall be reported to the House until it has been proved to the satisfaction of the Committee, that three-fourths at least of the proposed capital of the Company has been subscribed under a like contract.

16. That no such Bill shall be reported to the House unless provision be made:—1. That no such Company shall be authorised to raise, by loan or mortgage, a larger sum than one-third of their capital; and that, until 50 per cent. on the whole of the capital shall have been paid up, it shall not be in the power of the Company to raise any money by loan or mortgage. 2. That, where the level of any road shall be altered in making any railway, the ascent of any turnpike road shall not be more than 1 foot in 30 feet, and of any other public carriage road not more than 1 foot in 20 feet; and that a good and sufficient fence, of 4 feet high at the least, shall be made on each side of every bridge which shall be erected. 3. That no railway whereon carriages are propelled by steam shall be made across any turnpike road or other highway on the level, unless the Committee on the Bill report that such a restriction ought not to be enforced, with the reasons and facts upon which their opinion is founded.

Special Resolution, adplicable to all future Sessions.

That no line of railway shall be deemed a competing line in contemplation, unless the plan and section for the same shall have been deposited, as required by the standing orders, on or before the 1st day of March in the year 1837, or on or before the 1st day of March in any succeeding year.

FACT IN THE THEORY OF VISION.—On the retina and pigment of the eye of the calamary (Sepia Loligo.) It will be recollected that an important argument in favor of that theory of vision which assigns the choroid coat and not the retina as the seat of vision is drawn from the supposed structure of the eye of the cuttle fish. Mr. T. W. Jones has recently made a new dissection and microscopic examination of the eye of the Sepia, in which he finds that the supposed pigment in front of the retina is not really such, but a nervous expansion of a peculiar texture, tinged of a reddish brown color, a circumstance which has given rise to the error of supposing it merely a pigment.—[Lond. and Edin. Philos. Mag., January.]

FOX'S DIPPING NEEDLE DEFLECTOR.—This is a compendious instrument for determining the magnetic dip, intensity, and variation, invented by R. W. Fox, Esq., of Falmouth, England. It consists of a dipping needle accurately poised on an axis passing through the centre of gravity, to be deflected from the position of the dip by two bar magnets fitting into tubes attached to the back of the instrument, and the tubes being capable of motion round the axis of the needle so as to produce a greater or less proximity of the magnets to the poles of the needle. The needle having first been brought into the plane of the meridian, the approximate dip is obscured while the bar magnets or deflectors are not in place.—The plate to which the deflectors are screwed is then moved to make a convenient angle with this dip and the magnets inserted the north pole of one near the north pole, and the south pole of the other near the south pole, of the dipping needle. The

needle is thus deflected to a certain angle which is measured. The deflectors are then moved by moving the plate which carries them until they make the same angle with respect to the first dip, but on the opposite of it. The needle is thus again deflected, but in the opposite direction, and the half sum of the observed angles is the dip. By varying the position of the deflectors several observations may be obtained on different parts of the limb of the instrument, and, with a greater or less leverage, in the force of terrestrial magnetism. The relative intensities are observed by the amount of deflection produced by the magnets at a given angular distance from the line of dip, or by weights placed upon a flexible cord passing over a wheel attached to the axis of the needle, either with or without the use of the deflectors. A telescope attached to the plate or arm, carrying the deflectors, serves to determine the variation by a star, or by the image formed by a lens upon a plane of plaster of Paris, when an observation of the sun on the meridian is preferred. The readings of the vertical circle on which the needle plays are made accurate by a second graduated circle, placed near to the front of the box and of course between the eye and the needle. Verniers are provided for reading the angle of the deflectors and the azimuths. The instrument is provided with the usual means of levelling. When packed, the magnets form a circuit, with a view to a permanent condition in the several needles, or bars.—[Ann. Rep. Cornwall Polytech. Soc.]

From the Journal of the Franklin Institute.

REPORT OF THOS. JEFFERSON CRAM, PRINCIPAL ASSIST. PROF. NAT. AND EXP. PHILOS. U. S. MIL. ACADEMY, UPON EXPERIMENTS RELATIVE TO THE STRENGTH OF CAST-IRON BEAMS.—[COMMUNICATED BY PROF. A. D. BACHE.]

1. Soon after the destructive conflagration which devoured a large and valuable portion of the City of New-York, last winter, as a very natural consequence, the attention of capitalists became more fully awakened to the importance of constructing fire-proof buildings. Accordingly a demand was made upon Gov. Kemble, Esq., Principal of the West Point Foundry, for estimates of the cost of furnishing cast-iron, to replace the combustible parts which had hitherto been used in the interior of store houses and shops. To answer fully the demand which had been made upon him, Mr. Kemble thought it expedient to make a careful series of experiments upon the relative strength of cast iron beams of various forms, in order to ascertain, beyond a doubt, those which would be convenient for the particular object in view, and which would, at the same time, afford the greatest strength with the least cost. Through the politeness of Mr. Kemble, I had an opportunity of being present at the time of subjecting his cast-iron beams to the test of experiment; and believing that the results of those experiments will prove highly useful to the cause of construction in general, the writer of this begs leave to make them public through the medium of the Journal of the Franklin Institute.

2. It is presumed that the accompanying drawings will enable the reader to understand the forms of the experimental beams, it being remarked, that, in each case, the form was such as would be generated by giving the figure representing the cross section, a motion of translation only, along a straight line—keeping the moving area constantly perpendicular to the line of motion. The lower rectangle, *e*, *e*, *f*, *f*, would thus generate the "lower rib," and the upper rectangle, *a*, *a*, *b*, *b*, would generate the "upper rib," of the beam; and the rectangle, *c*, *d*, *d*, *c*, would generate what we shall call the vertical plate of the beam. It will be seen at once, that almost any distribution of a given quantity of material, may be effected, by merely varying the dimensions of the rectangles in constructing the pattern for the casting.

3. The arrangement, for augmenting at pleasure, the pressure upon the beam, consisted of a combination of levers—one of which being a large Roman steelyard with a scale at the extremity of the longer arm: a small weight being placed on the scale, had its effect greatly augmented by the combined multiplying effects of the levers; and this increased effect was exerted by means of a cylindrical piece of iron laid straight across the middle of the top surface of the beam; so that the pressure acted uniformly along the transverse line of the middle of the upper surface of the beam. By this arrangement a small weight could be carefully applied to the scale of the steelyard without exerting a percussive effect.

4. In every case, the beam was supported by resting each of its extremities upon a well squared piece of iron about two inches in diameter, so that before exerting any pressure upon the beam, the bearing of each extremity was about two inches; and it may be well to remark here, that, immediately after the beam felt the pressure, the extremities bore only upon the inner edges of the supporting pieces of iron; and hence, the "distance between the points of support" in what follows, must be regarded as the perpendicular distance between the inner surfaces of said supporting pieces of iron.

5. The pressures exerted are expressed in English pounds avoirdupois; the linear dimensions are expressed in English inches and parts, and the superficies in square inches. The dimensions were measured several times and when any difference was found, a mean of the whole was taken as the final result. The drawings are all made upon a uniform scale, the top and the front views containing, of course, but a small portion of the beam in length. The depressions recorded in the tables, were measured with the utmost care.

6. EXPERIMENT I.

Fig. 2. *Fig.* 4. *Fig.* 3. *Fig.* 1.

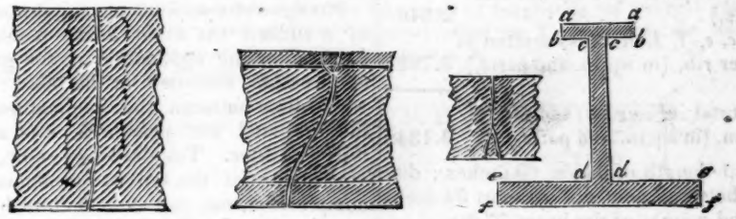

Fig. 1. represents a cross section of the beam.

Fig. 2. a top view of the fracture of the lower rib.

Fig. 3. a top view of the fracture of the upper rib.

Fig. 4. a side view of the fracture of the beam.

DIMENSIONS, &c.

Depth, *a*, *b*, of upper rib,	.31 in.
" *c*, *d*, of vertical plate,	4.15
" *e*, *f*, of lower rib,	0.66
Total of the beam,	5.12
Breadth *a*, *a*, of upper rib,	2.36 in.
Thickness *d*, *d*, of vert. plate,	0.394
Breadth *f*, *f*, of lower rib,	6.74
Area *a*, *a*, *b*, *b*, of cross section of upper rib, (in sq. in. and parts,)	0.7316
Area *c*, *d*, *d*, *c*, of cross section of vertical plate, (in sq. in. and parts,)	1.6351
Area *e*, *e*, *f*, *f*, of cross section of lower rib, (in sq. in. and parts,)	4.4484
Area total of cross section of beam,	6.8151

Total length of beam, 60 inches; distance between points of support 54 inches; and weight of the beam 105 lbs.

CIRCUMSTANCES.

The pressure being exerted upon the top of the upper rib, the upper part of the beam experienced a compression of its particles; and the lower part an extension of its particles. Augmenting the pressure by degrees—so carefully, however, as not to produce a percussive effect—the beam bent more and more as the pressure increased, until of a sudden it ruptured. The annexed table exhibits the depressions of the middle of the beam in proportion as the pressure was augmented

Pressures upon the middle.	Depressions of the middle.
½ (105)= 52½ lbs.	0.00 in.
15676	0.28
17244	0.32
18028	0.34
19596	0.40
20380	0.42
21948	0.46
23516	0.52
25084	0.58
25868	Beam broke.

No indications of rupture were observed during the successive augmentations of the pressure, until the beam suddenly broke under the last pressure recorded in the table; and the whole time between the applications of the first and last pressures was nearly twenty-five minutes.—The drawings faithfully exhibit the appearance of the fracture; and it will be perceived that the fracture of the top of the beam was produced by compression, and that of the bottom, by extension. Dividing 25868 lbs., by 68151 square inches, it will be found that this beam broke under a pressure of 3796 lbs., per square inch of cross section: and an inspection of the table will show the circumstances of its resistance to flexure. It should be remarked, that this beam was cast on its side, and therefore had less strength than if it had been cast on end.

Fig. 6.

Fig. 7.

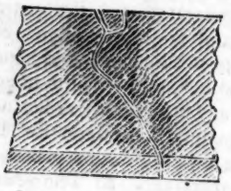

Fig. 5.

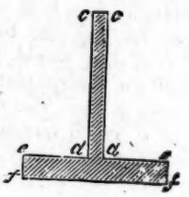

Fig. 5. represents a cross section of the beam at the place of fracture.

Fig. 6. a top view of the fracture of the lower rib.

Fig. 7. a side view of the fracture.

DIMENSIONS, &c.

No upper rib,	0.00 in.
Depth *c*, *d*, of vertical plate	5.10
" *e*, *f*, of low rib,	0.74
" total of beam,	584
Thickness *c*, *c*, of vert. plate	0.46 in.
Breadth *f*, *f*, of lower rib,	5.12
Area *c*, *c*, *d*, *d*, of cross section of vertical plate (in sq. in. and parts,)	2.346
" *e*, *e*, *f*, *f*, of cross section of lower rib, (in sq. in. and parts,)	3.7888
" total of cross section of beam, (in sq. in. and parts,)	6.1348

Total length of beam 60 inches; distance between points of support 54 inches; and weight of the beam 77 lbs.

CIRCUMSTANCES.

There was no upper rib to this beam; therefore the pressure was exerted upon the top, *c*, *c*, of the vertical plate so as to compress the upper parts of the beam and to extend the lower parts. The pressures were augmented at intervals of a few minutes, and with all possible care to prevent percussion. The following table contains the pressures exerted, and the corresponding depressions, which were carefully noted.

Pressures upon the middle.	Depressions of the middle.
½ (97) = 48½ lbs.	0.00 in.
15672	0.28
16456	0.28
17240	0.32
18024	0.32
18800	0.36
19592	0.38
20376	0.40
21160	0.42
21944	0.46
22728	0.48
23512	0.54
24296	Beam broke.

No signs of a rupture appeared until all of a sudden the beam broke a few seconds after the application of the greatest pressure recorded in the table: the whole time between the applications of the first and last pressures, was about thirty minutes. The drawings show, that the fracture at the top was produced by compression, and, that at the bottom, by extension of the particles of the beam. Dividing 24296 by 6.1348, we obtain 3960 lbs., for the pressure per square inch, of cross section, which this form of beam sustained before breaking. The table shows the state of the flexure at the different periods of the operation, and the drawings will explain the peculiarities of the fracture. This beam was cast on end; and it will be seen, that this form sustained more, before breaking, by 164 lbs., to the square inch of section, than that of Experiment I.

8. EXPERIMENT III.

Fig. 9.

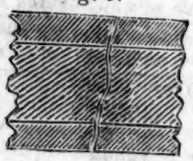

Fig. 8.

Fig. 8. is a cross section of the beam when rupture took place.

Fig. 9. a side view of the fracture.—The fractures were nearly straight across the ribs.

Depth, *a*, *b*, of upper rib,	0.800 in.
" *c*, *d*, of vertical plate,	3.12
" *e*, *f*, of lower rib,	0.80
" total of beam,	4.72
Breadth *a*, *a*, of upper rib,	2.42 in.
Thickness, *c*, *c*, of vert. plate,	0.94
Breadth, *e*, *e*, of lower rib,	2.42
Area *a*, *a*, *b*, *b*, of cross section of upper rib, (in sq. in. and parts,)	1.9390
Area, *c*, *c*, *d*, *d*, of cross section of vertical plate, (in sq. in. and parts,)	2.9328
Area, *e*, *e*, *f*, *f*, of cross section of lower rib, (in sq. in and parts,)	1.9360
Area total of cross section of beam, (in sq. in. and parts,)	6.8048

Total length of the beam 60 inches; distance between points of support 54 inches; and weight of the beam 102 lbs.

CIRCUMSTANCES.

This beam very suddenly broke under (the first pressure applied,) 15674 lbs.—Indeed, it was doubtful even whether that amount of pressure had yet been fully exerted. Admitting however, that the whole pressure was felt, the beam broke under a pressure of only 2304 lbs. per square inch of cross section; and if the whole amount of pressure was not exerted, of course the beam was still less strong. This beam was cast on its side from the cupola furnace, and with no selection of metal, but all from one ladle. The sudden rupture of this beam made it impossible to measure the depressions. The drawing of the fracture would seem to indicate that it broke by extension.

EXPERIMENT IV.

9. The beam tried in this experiment, was exactly of the same form and dimensions as that of experiment II.; but it was not so good a casting. It was placed with the rib uppermost, in a manner exactly reverse of that described in experiment II., so that the pressure was exerted upon the top surface of the rib, the beam resting with the edge of the vertical plate upon the supports; and thus causing a greater portion to experience compression, and a less portion to experience extension, than in either of the other experiments. Under these circumstances, the beam ruptured very suddenly even before the pressure arising from the apparatus of levers alone, had been brought to act fully upon the rib; thus affording a striking example of the great gain of strength, by giving a proper position to the beam with respect to the manner in which its different parts are to be strained—whether by compressing or by extending its particles.

10. Representing by 1.00 the strength of beam in experiment I., per sq. inch of cross section, the relative strengths of the different forms to resist rupture, will be expressed as follows:

Beam of the form described in Exp. I., Strength to resist rupture, 1.00

Beam of the form described in Exp. II., Strength to resist rupture, 1.04

Beam of the form described in Exp. III., Strength to resist rupture, 0.44

By comparing the areas of the cross sections of the different forms, it will be seen that greater strength may be gained, at a less expense of metal, by giving the

beam the form in experiments I and II., instead of the form in experiment III.

All of which is respectfully submitted.

THO. JEFFERSON CRAM.

To Prof. A. D. BACHE, Univ. of Penn.
West Point, June 1836.

ON THE ELICTRICAL RELATIONS OF CERTAIN METALS AND METALLIFEROUS MINERALS.—Mr. R. W. Fox finds that the crystalized grey oxide of manganese, holds a much higher place in the electro-negative scale than any other body with which he has compared it, when immersed in various acids, and alkaline solutions.—This and some of the other bodies examined by him, rank thus: 1, manganese; 2, rhodium, loadstone, platinum, arsenical pyrites, plumbago, nearly equal; 3, iron pyrites, copper pyrites nearly equal to the second; 4, salina; 5, standard gold; 6, copper-nickel; 9, silver; 8, copper; 9, sheet iron.—[Extract from Trans. Royal Soc. Lond. 1835.]

INDIANA IMPROVEMENTS.—A grand festival took place at Brookville, Ind., on the 13th ult., to mark the commencement of the White Water Canal. Upwards of 4,000 persons, it is estimated, were present, among whom were the most distinguished citizens of the State. The work, or a great portion of it, was put under contract the next day at Lawrenceburgh.

M. Gambert, the Astronomer, Director of the Marseilles Observatory, and correspondent of the Institute, died at Paris. This gentleman is well known in the scientific world for his frequent discoveries of comets.

From the Journal of the Franklin Institute.

COMMUNICATION OF A FORMULA FOR FACILITATING THE REDUCTION OF OBSERVATIONS OF THE SOLAR ECLIPSE OF MAY 15TH, 1836. BY S. C. WALKER.

TO THE COMMITTEE ON PUBLICATIONS.

GENTLEMEN: The formulæ communicated by me in the April number of the Journal, were intended for announcing the time of the principal phases of the solar eclipse of May 15. By applying a direction derived from observations made under a known meridian, they may be used for determining the longitude of places at which it was observed, when not too far distant from Philadelphia, for which place alone they are strictly correct. The error of the middle time of the eclipse, as deduced from the formula, amounts of one second of time for New-York and Albany, to two seconds for Baltimore and Washington, and to eight seconds for Boston and the University of Virginia. By applying to the middle time by the formula, a correction depending upon the first and second powers of the difference of longitude from Philadelphia, results may be obtained, in which the greatest variation from a rigorous computation for the above places, will in no instance exceed 0. 6 sec., and in which the average discrepancy will not exceed 0. 4 sec. In the former communication it was omitted to mention that l, denotes the *geocentric* latitude of the place for which the computation is made.

Retaining the same notation and constants as before, we have for the resulting longitude for the place of observation from Greenwich, + East—West

$$\lambda = A + B + C$$

Where,

$$A = \lambda' + x + \left\{ M - M' \right\} - [8.8557] \left\{ D - D' \right\}$$

$$B = [4.9781] \left\{ 5\text{h. } 0\text{m. } 40\text{s.} + A \right\}^2 - [7.1701] \left\{ 5\text{h. } 0\text{m. } 40\text{s.} + A \right\}$$

$$C = -\tfrac{1}{8} \left\{ A + B\lambda - ' \right\}$$

In these equations

λ' = Assumed longitude from Greenwich, in seconds of time.
M = Local mean time of middle, observed,
M' = do. computed by formula.
D = Duration, observed.
D' = do. computed,
x = A correction for the errors of the tables.

The unknown quantity x, is the mean of the times at beginning and end, in which the moon by its apparent motion, traverses a space equal to the tabular error on its true orbit, projected upon its apparent orbit.—No material error will arise from assuming x, as constant for the limits to which this formula extends. Of the extent to which it may be used, an opinion may be formed from the following table, in which the middle time $M' + B$ derived from it, is compared with the rigorous computations for several places in the American Almanac.

Place.	M'	B.	Middle by Formula M' + B	Middle by Am. Almanac.	Difference.
Philadelphia,	8 17 55.35	+0.00	8 17 55.35	8 17 54.75	+0.60 s.
Boston,	8 42 30.80	+7.73	8 42 38.53	8 42 38.90	—0 37
Providence,	8 39 42 55	+6 31	8 39 48.86	8 39 48.65	+0.21
Albany,	8 3 11.15	+0.60	8 30 11.75	8 30 11.80	—0.05
New-York,	8 25 1 45	+0.32	8 25 1.77	8 25 1.65	+0.12
Baltimore,	8 9 40.95	+1.69	8 9 42.64	8 9 43.20	—0.56
Washington,	8 6 58 30	+2.56	8 7 0.86	8 7 0 30	+0.56
University of Virginia.	7 58 10 33	+7.37	7 58 17.70	7 58 18.15	—0.45
					8)2.92

Greatest difference, 0. 6 sec. Mean difference, 0. 36 s.

The determination of x, requires observations under known meridians. This eclipse having been visible at European observatories, the value of x, will admit of accurate computation. If we assume the longitude of Independence Hall, Philadelphia, at 5h. 0m. 40s. west from Greenwich, we shall have, after correcting for the small differences of longitude of several places of observation in Philadelphia, the following values of x,

Observations of R. M Patterson, M. D.	$x = -11.15$ sec.
" T. M'Euen, M. D.	$x = -9.67$
" W. H. C. Riggs,	$x = -11.40$
" S. C. Walker,	$x = -11.93$
	44.15
Mean of four observations,	$x = -11.04$

As an application of the formula, let it be required to deduce the longitude of the Capitol at Washington, from the observations of F. R. Hassler, Esq. Latitude 38° 52′ 54.″ Beginning observed 6h. 53m. 58s. End at 9h. 20m. 8s., A. M. Mean time.

Computation of the longitude of the Capitol.	1st. Approximation.	2d. Approximation.
(1).... assumed λ'	— 5h. 8m. 7.20	— 5h. 8m. 10.02
(2).... assumed	— 11.04	— 11.04
M	+ 8 7 3.00	+ 8 7 3.00
M'	+ 8 6 58.30	+ 8 6 54.88
(3).... M—M'	+ 4.70	+ 8.12
D	+ 2 26 10.00	+ 2 26 10.00
D'	+ 2 26 13.60	+ 2 26 12.24
D—D'	— 3.60	— 2.24
(4).... — [8.8557] $\left\{ D-D' \right\}$	+ 0.26	+ 0.20
(1)+(2)+(3)+(4).... A	— 5 8 13.28	— 5 8 12.74
5h. 0m. 40s.+A	— 7 33.28	— 7 32.74
(5) ....+ [4.9781] $\left\{ 5\text{h. } 0\text{m. } 40\text{s.} + A \right\}^2$	+	+ 1.92
(6) ....— [7.1701] $\left\{ 5\text{h. } 0\text{m. } 40\text{s.} + A \right\}$	+	+ 0.67
(5)+(6) .... B	+ 2.56	+ 2.59
A+B	— 5 8 10.72	— 5 8 10.15
A+B—λ'	— 3.52	— 0.13
$-\tfrac{1}{8}$. $\left\{ A+B-\lambda' \right\}$ =C	+ 0.70	+ 0 03
A+B+C =λ	— 5 8 10.02	— 5 8 10.12

Similar computations from John Gummere's observations, give the longitude of Haverford School.

Observed beginning	7h.	3m.	24 5s.
" end	9	31	47.

" latitude	40°	1′	12″	
assumed	λ″	5h.	1m.	26.8s.
First approximation	λ′	5	1	16·94
2d "	λ	5	1	16.15

From the Journal of the Franklin Institute.

OBSERVATIONS OF THE SOLAR ECLIPSE OF MAY 15TH, 1836. COMMUNICATED BY DIRECTION OF THE AMERICAN PHILOSOPHICAL SOCIETY.

TO THE COMMITTEE ON PUBLICATIONS.

GENTLEMEN:—By direction of the American Philosophical Society, I send you an abstract of the observations of the late solar eclipse, which have been communicated to the Society. It is not complete, some particulars being required which will probably be obtained from the observers, by the committee to whom the observations have been referred, to prepare them for publication in the Society's transactions.

The times of beginning and end are in mean time of the places of observation.

Very respectfully yours,

A. D. BACHE,

One of the Secretaries, Amer. Philos. Soc.

Table of observations of the beginning and end of the solar eclipse of May 15th, 1836, as observed at Philadelphia, &c.

Places of Observation.	Time of beginning of Eclipse.	Time of end of Eclipse.	Observers' Name.	REMARKS.
Philadelphia.	h. m. s.	h. m. s.		
1. Hall of Am. Phil. Soc.	7 3 45.8	9 32 38.3	Dr. R. M. Patterson,	
2. Dr. McEuen's house.	7 3 38.0	9 32 38.1	Dr. T. McEuen,	2770 feet west of Philos. Hall.
3. "	7 3 50.0	9 32 26.5	Mr. W. H. C. Riggs,	
4. No. 100 S. 8th st.	7 3 40.9	9 32 44.1	Mr. S. C. Walker,	1340 feet west of Philos. Hall. Teles. 42 inches achrom.
5. No. 231 Market st.	7 3 41.0	*9 32 34.0	Mr. Sellers,	
Haverford school,†	7 3 24.5	9 31 4.07	Mr. Jno. Gummere,	Telescope 42 inch. achrom.
Germantown, Pa.	7 3 54.5	9 32 44.5	Mr. Isa. Lukens,	
	7 3 55.5	9 32 49.5	Mr. C. Wistar,	Telescope 3 feet achrom.
Phœnixville, Ches. co.‡	7 3 12.0		Mr. H. Wilson,	
West Hills, L. I.§	7 12 48.5	9 43 40.0	Mr. J. Ferguson,	Large repeating circle of coast survey, used for observations.
Washington City,	6 53 58.0	9 20 08.0	Mr. F. R. Hassler,	

* Doubtful.

† Assumed lat. 40° 01′ 12″. Long. 5h.01m. 25s.

‡ Assumed lat. 40° 08′ 07″ Long. deduced by H. Wilson, from eclipse, 5h. 01m. 57s.

§ One of the station points of the coast survey. Lat. 40° 48′ 49.2″. Long. 73° 26′ 12″

From the Journal of the Franklin Institute.

REPORT ON MESSRS. GARRETT AND EASTWICK'S LOCOMOTIVE STEAM ENGINES.

The Committee on Science and the Arts, constituted by the Franklin Institute of the State of Pennsylvania for the promotion of the Mechanic Arts, to whom was referred for examination, the Locomotive Engines made by Messrs. Garrett and Eastwick, report :—

That they have examined one of these engines now in progress of construction, at the shop of Messrs. Garrett and Eastwick, and witnessed the performance of another which has been completed and placed on the Philadelphia and Trenton Railroad for trial.

They are constructed upon the principle of outside connections, the general arrangement being similar to that adopted by Mr. M. W. Baldwin, with some modifications, however, of sufficient importance to give them a distinct and original character.—The most striking peculiarity is in the manner of reversing. This operation is performed in the different engines heretofore in use, by various contrivances, all of which involve the necessity of ungearing the connection of the eccentric rods with the rock shafts : consequently their action depends upon the contingency of throwing these parts again into gear, which can be effected only at particular points in the revolution of the eccentrics.

In the engines under considerrtion, the reversing is performed by means of moveable valve seats, which are placed between the slides and the true seats, and connected with hand levlers by rods passing through stuffing boxes in the steam chest.

In each moveable seat are five passages, four of which are steam ways and one for the exhaust ; two of the steam ways and the exhaust opening pass directly through the seat, the other two steam ways pass only about one-third through, and communicate with chambers which form oblique passages from one end of the seat to the other, so that the steam which enters the upper opening at one end of the seat, escapes by the lower opening at the opposite end.

When the moveable seat is so adjusted that the direct passages coincide with the openings in the true seat, the action of the valve is similar to the common short slide ; but if the seat be shifted, so that the communication shall be through the oblique passages, the course of the steam to the cylinder will be reversed without any change in the motion of the slide. This arrangement possesses the merit of simplicity in a high degree, and as its action does not depend upon any contingency, the engine can be reversed with certainty and precision. A small loss of steam results from the increased thickness of the valve seat, but it is believed the amount will not be sufficient to produce any appreciable effect upon the power of the engine. It has been suggested that the inequality of wear to which the movable seat will be subjected in its different positions, must render its surface irregular, and impair the tightness of the valve ; some inconvenience may arise from this source, the extent of which can be determined only be experience ; it is not apprehended, however, that the evil will be of a serious nature.

The situation of the cylinders and driving wheels in engines, with outside connections, allows a leverage to the working strain which very much insrease the wear between the driving axles and their boxes, and also twists the frame out of its proper form. Messrs. Garrett and Eastwick have endeavored to guard against the injury resulting from this cause by some slight changes in the parts most exposed to its effects.

Instead of turning down the bearings of the driving axle to obtain a shoulder for preventing lateral motion in the axle, they leave the axle its full size throughout, and provide against lateral motion by facing the hubs of the wheels, so as to form shoulders which bear against the outer ends of the boxes. The increased extent of bearing surface which is thus obtained both within the boxes and at their ends, enables them to resist more effectually, the thrust of the engine and adds to their durability.

The firmness of the whole machine has been increased by bracing the cylinders to the fire box, and bolting to the under side of the frame a strong plate of iron, which passes entirely around it and is secured to the pull bar.

The Committee have been informed that the engine which is upon the Trenton Road, has given entire satisfaction during a trial of several weeks constant service ; the exhibition of its performance witnessed by them was highly gratifying, and they feel themselves warranted in saying that these engines afford evidence of ability to manufacture locomotives equal to any in the country for excellence of workmanship and general finish.

By order of the Committee.

WILLIAM HAMILTON, Actuary.

July 14, 1836.

From the Journal of the Franklin Institute.

REPORT OF MR. RAUB'S STEAM GAUGE.

The Committee on Science and the Arts, constituted by the Franklin Institute of the State of Pennsylvania for the promotion of the Mechanic Arts, to whom was referred for examination, Mr. Raub's Steam Gauge, Report:—

That Mr. Raub's Steam Gauge consists of a safety valve or piston, differing in no essential feature from ordinary safety valves except that there is connected with it, by means of a lever, a weight, suspended in the water of the boiler, in such manner that when the water gets below a certain point, at which the weight is placed, the increased power of the weight, arising from its losing the support of the water, assists in opening the safety valve.

The practical effect is this:—If the safety valve is so graduated that steam will be blown off at a certain pressure, say seventy-five pounds to the inch, when the boiler is properly filled with water, it will escape at a lower pressure, say fifty or sixty lbs., to the inch, according to the dimensions of the weight, when the water is too low. In this way it is proposed to avoid the explosions, or other evil effects which might arise from a portion of the boiler becoming bare of water and heated to a higher degree.

The principle of which the weight acts, is like that of the floats which have been heretofore used, to show the height of water in the boiler, except that the weight in Mr. Raub's machine is connected with the ordinary safety valve, and the steam is blown off in large quantities when the water is too low, instead of a simple alarm being sounded.

The question for the consideration of the Committee is whether this combination, is advantageous. It is a matter of doubt, whether the blowing off of a quantity of steam when the water is deficient in the boiler, is not pernicious, as tending still more to exhaust the water; and whether the old application of the float to regulate the supply of water is not better. Waving these questions, however, it appears evident to the Committee that if a weight or float is to be used to cause the escape of steam, when the water is too low, it is better to have it attached to a seperate valve, instead of being connected with the ordinary safety valve; because on the latter plan it will not operate when the steam is at a low density or pressure, although the water be deficient; and because when it does operate, the engineer cannot know whether its action is in consequence of the water being too low, or the steam too high. Hence the advantages usually anticipated from the use of floats, cannot be realized from this machine.

Whether floats or weights can safely be relied on for showing the low state of the water in the boiler, and for obviating its effects, is a question of experience which it is unnecessary here to discuss, inasmuch as Mr. Raub does not claim to have originated them, but to have made an improvement in their application: and for the reasons above stated, the Committee are not satisfied that his steam gauge, in its present form, will be found practically advantageous.

By order of the committee.

WILLIAM HAMILTON, Actuary.

May 12, 1836.

From the Journal of the Franklin Institute.

COMMITTEE ON SCIENCE AND THE ARTS. REPORT ON MR. AMASA HOLCOMB'S REFLECTING TELESCOPE.

The Committee on Science and the Arts, constituted by the Franklin Institute of the State of Pennsylvania for the promotion of the Mechanic Arts, to whom was referred for examination, a Reflecting Telescope, invented by Mr. Amasa Holcomb, Southwick, Massachusetts, REPORT:—

That the following description of the instrument, submitted to the Committee, is given by Mr. Holcomb, viz:

"It is of the reflecting kind, having the front view, and has a focal length of about nine and a half feet, and an aperture of eight and a half inches. It has six eye pieces, of powers from ninety to nine hundred and sixty."

The evenings of the 22d and 23d of April, proving unfavorable, a third trial was made on the following night, when the performance of the instrument was very satisfactory. It is of the same size as the largest submitted last year. The mechanical execution of the mounting is quite superior, and leaves little to be desired, whether we regard steadiness, convenience in command of the instrument, or facility of finding objects.

The committee do not hesitate to pronounce this instrument superior in performance to any that have yet been exhibited by Mr. Holcomb.

The ring of Saturn was seen to be double by all the members of the committee present, the dark space between the rings could be observed on each ansa, half way to the conjugate axis of the perspective ellipse, under which it was viewed.

ζ Bootis which last year was so far separated that the discs became tangent to each other, presented the same appearance this year, with a power of 250. But with a power of 960 the dark space between the stars was equal to one-fourth of the disc of either.

In ζ Cancri, the close pair, distant about 1″.1, were so far separated that the dark space was visible as a line between them. This was considered too difficult for either of the telescopes exhibited last year.

A power of 960 was used in examining γ Virginis. This remarkable pair, of which the distance is 0″.8, according to Herschel's ephemeris, or 0″.6, according to Struve's late measurements, give no indications of being double.

This instrument was made to order for John A. Fulton, Esq. of Chillicothe, Ohio, a gentleman whose liberal encouragement of this department of the arts is worthy of all commendation. While, however, the committee would applaud the patriotism of those individuals, or corporate bodies, who encourage American artists, they cannot but remark, that should the course of Mr Holcomb be suddenly arrested, and the manufacture of these instruments cease in this country, their place could hardly be supplied by importation, at three times their present cost.

The four or five choice instruments made by Mr. Holcomb, have been the result of twice as many years of labor and perseverence, for which no adequate compensation can have been expected, except that satisfaction which every lover of science feels, in improving and extending the means by which it may be pursued.

The committee have little doubt that under proper auspices, and at an expense not exceeding that already encountered by some of our corporate institutions, in procuring instruments of little use, a twenty foot telescope might be made, which should do honor at once to the artist and the country.

By order of the committee.

WILLIAM HAMILTON, *Actuary.*

March 11, 1836.

From the London Mechanics' Magazine.

DEFEAT OF THE STEAM-CARRIAGES' BILL.

Report from the Lords' Committee appointed to consider the Bill entitled "An Act to Repeal such portions of all acts as impose prohibitory Tolls on Steam-Carriages, and to substitute other Tolls on an equitable footing with Horse Carriages;" and to report to the House.

Order to report,—

That the Committee have proceeded to the examination of witnesses on the Bill referred to them, and have to report to the house, that the evidence of the principal engineers who have turned their attention to the construction of carriages propelled by steam upon the highways proves that very considerable progress has been made towards their perfection, and that they can travel with great rapidity.

The noise and smoke attendant upon their use have been very materially diminished; but it has been shown in evidence that they still have the effect of terrifying horses, and that accidents have occured in consequence.

Much conflicting evidence has been tendered to the Committee as to the safest shape and the proper limitation of the size of vessels for generating steam to be used in these carriages. All the witnesses, however, agree that in whatever shape the boilers may be made, their size should be such as would in case of explosion not endanger the safety of the public; and the committee do not feel themselves at present competent to come to such a conclusion on these two important points as would enable them to recommend the necessary enactments, if it was found expedient to proceed further with the Bill.

No adequate means have yet been provided effectually to guard against the emission of sparks from the chimneys of the engines which would guard effectually against the danger arising from them, although, with proper care in the selection and preparation of fuel, it does not appear that the danger is very imminent.

It also appears by the evidence of some of the witnesses examined, that although the management of the carriages is by no means difficult when under the superintendence of an experienced conductor, yet that they require much greater skill than is necessaryon the management of locomotive engines up in railways: and to find persons properly qualified might be a matter of considerable difficulty.

It is essential that the weight and size of the carriages to be employed should be regulated, so as to prevent their being made of that weight and size which might prove destructive of the roads and a serious nuisance to the public.

It appears also that the tolls intended to be imposed by the Bill are calculated upon an erroneous view of the powers of a horse. The rate of toll is calculated upon the supposition that each horse is able to draw a

ton weight; whereas it is shown that a horse cannot, at a rapid pace, upon ordinary roads draw more than half that we ght.

The Committee entertained serious objections to the Bill referred to them; and they are not of opinion that these objections are counterbalanced by the prospect of any public advantage. The evidence, on the contrary, proves that the proposed mode of conveyance can only be applied to passengers; and it appears that some experienced engineers, after a careful examination of the expenses attendant upon it, have been induced to abandon all hopes of its success as a profitable undertaking.

It is probable, therefore, that any encouragement on the part of the Legislature would only give rise to wild speculations, ruinous to those engaging in them, and to experiments dangerous to the public. The Committee, therefore, recommend that this Bill should not at present be proceeded with; at the same time, they have no donbt that the further imposit'on of prohibitory tolls in local acts is not a desirable mode of legislating upon such a subject.

And the Committee have directed the evidence taken before them to be reported to the House, together with the index thereto.

AGRICULTURE, &c.

[From the Boston Commercial Herald]

BEET SUGAR.

(Continued from p. 671.)

ARRAS, April 4, 1836.

DEAR SIR—Pardon me if I tease you with my frequent letters. but the fact is, I *hear* so much of Beet Sugar, I *see* so much of Beet Sugar, and *eat* so much of Beet Sugar that you must not wonder if I return to you in the shape of a *Marmalade*. I believe I told you in my last letter that I was setting off for Lisle, Valenciennes and neighborhoods; my main object was to ascertain where was the best system of Sugar making practised that I might be able by observation to know which to prefer; but I had another end in view, namely: to find out where it was that refined sugar, loaf sugar, was made from the Beet by a single process: every one *who knew nothing of the matter* assured me it was done somewhere, while all the manufacturers declared the thing was impossible; still I was determined *if possible* to hunt it up, and at Famars, in the neighborhood of Valancies, I found a very large manufacturer who was absolutely making beautifully white sugar from the Beet, by a simple process; and although he is selling it at a price two cents only below the refined sugar, yet it is, after all, *powdered sugar*, and by no means loaf sugar; when I told him what I had been led to expect, he declared the thing to be impossible, by no means to be desired, and totally incompatible with the profitable preparation of sugar in the brown state, which requires the most incessant care and circumspection while in process, and is of a magnitude sufficient to engross all the time and talent of the most industrious. I have therefore, been pursuing an *Ignis*, but not a *fatuus*, for I have added exceedingly to my knowledge and experience, but not one jot to the conviction which I before entertained, of the facility with which sugar from the Beet might be prepared to any extent; I am therefore returned to Arras to study the art at the finest establishment in France, and where they have a sufficient quantity of the roots remaining for another week's crushing—I hope more. At Valenciennes and the neighborhood there were, three years ago thirteen sugar manufactories; now, there are sixty-four! Land which was worth 500f. an arpent will now bring 1200, labor has very much risen, and never, in any country did I witness such excellent farming. The residuum from the sugar houses is extremely rich, as a manure, and this they are now spreading on their young crops of clover, which are prodigiously flourishing; they do not manure for the Beet, but for the preceding crop, and one half the expense of hoeing and cleaning the Beet is charged to the following crop, which is so much benefitted by the operations.—The drill which they use, Crespels, sowing 8 lbs. of seed to the acre, is a most valuable instrument for the lands in America. At a manufactory in Valenciennes, conducted by a farmer, who is also a Brewer, a wine merchant and a distiller, I saw some very good machinery, which crushes 50,000 lbs of Beet in 24 hours; at another they crush 70,000 lbs. while a third crushes 75,000 lbs. evaporating all the juice and crystalizing all the sugar therefrom in 16 hours only. 100 lbs. of Beet yield 85 pounds of juice. The brewer purchases beet root for 1 franc per 100 lbs., and sells the pressed cake, for oxen and sheep at 5 cents per basket, about half a bushel: on the other side of Valenciennes, at the distance of a few miles, I was introduced to a person whose premises are enormously large, I saw, in one stable 50 large plowing horses, 7 saddle horses in another stable, 30 fatting oxen, which have nothing but the cake and straw, to feed on, and two of the largest oxen I have seen for many years, finishing off with cake mixed with oil cake, a most capital food; his sheep were feeding on the cake, but they were a breeding flock; his beet roots were very fine, and has been preserved from the frost, much better than those of many of his neighbors. he calculates that, in a good season, the beets yield 10 per cent. of saccharine, say six of crystalized sugar, 3 of molasses, and 1 of molasses contained in the cake. Now all the manufactories which I have yet seen were very large, and conducted at an expense of machinery truly astounding: this I was regretting to a person in this town, who told me there was a curious man residing in one of the back streets, who had made sugar this winter, with machinery of his own invention, and almost by the labor of his own hands: he took me to see his works, but he had finished crushing: I found him a native genius; he told us he had not the means to purchase the expensive machinery, still he was determined to make sugar, and so he did; his premises are small, and his works entirely *without steam*; his crushing mill is driven by horses, which he feeds upon the cake, and he hires land ready prepared for the beet of the neighboring Farmers; thus he has every disadvantage, and yet, in this way he made 100,000 lbs. of sugar from the 2d Sept. to the 21st March. (I think he said) and intends to make 200.000 next year. It is curious to see his machinery after being so much amongst steam engines, and a power of 120 horses, &c., but much of it might be adopted for the use of our Farmers. He has given me permission to make drawings of the whole, and I mean to off coat and work with him at crystalizing his molasses. the most difficult part of the process by far.

* * * * But the cultivation of the beet embraces three grand and distinct objects: 1st the making of the sugar. 2d the feeding of cattle. 3d the improvement of agriculture or rather of *husbandry*, either of these is of vast importance; together, they form a whole, which I have no fear about, let competition come from what quarter it may.

* * *

One thing is certain, all the Continent is preparing to make Sugar from the Beet, and from hence to Belgium the country is covered with it and Sugar-houses; in many places between Valenciennes and this, I counted six or eight of these large buildings together, and at one place there were actually twenty in sight at one time! This says something—what is it?

* * *

At Valenciennes, a gentleman is erecting an immensely large building as a Refinery for Beet Sugar—he will refine two millions of pounds a year; he politely showed me the works, and invited me to visit him again, when all is in operation, which I intend to do, as this part of the business may eventually be of importance to us. There are many very large Sugar-houses near Lisle, which I am to see after I have finished here; they will not then be crushing but working up Molasses. I can then see their machinery. which is almost different, in every manufactory which I visit, especially the arrangement.

Tuesday, 5th of April.—I have now spent a long day at Mr. C.'s noble manufactory.—Indeed I know not how to express what I feel. One thing is quite certain, the manufacture will soon be planted in America by some one, and be followed up by hundreds.

* * *

The land must be *healthy*, not a *wet subsoil*, for if it be so, although it might produce the finest crops, they would decay during the winter to a certainty.

* * *

My friend—he of the small manufactory—will enable me to do all that is necessary for our farmers, but they must not expect to work at such a profit as is done by the improved machinery. But I find, after all, I must purchase the Drill. I have spent some time to day examining its parts, and the more I see the more am I satisfied it would not be in my power to do justice by a model either to it, to myself, or to the *land of my adoption*. It is to be taken to pieces and packed more snugly; but whatever be the cost or the labor. I am willing to debit it with the whole with no fear for the result: you will see it is cheap too.

* * *

If I stay, I shall witness much of the cultivation of the crop of Beet, and probably some other crops that might be advantageously transported to America.

* * *

ARRAS, 22d April, 1836.

JACOB SNIDER, Jun. Esq:

DEAR SIR:—Your we come letter of 22d March I have received, and am truly thankful that all our friends are in health; will they accept my affectionate and grateful remembrance. By this time you will have received several letters from me on the subject of my mission. I have said that the Beet sugar business is becoming of the greatest importance to the whole continent; as a proof that it is so, there is not a coppersmith or iron founder in this department of France who has not more orders for machinery than he can execute. One in this town, who employs 300 workmen in copper brass, and iron, has orders for two years to come, chiefly in the sugar machinery for foreign countries. I have also said that the success attending the fabrication has in a great measure been owing to the encouragement held out by the government who have offered premiums for the best modes of preparation, and in this they have been joined by the scientific bodies in France and other countries. Thus far all has been well, and no one can calculate the good that has been

effected by this branch of Agrico-manufacture: the face, both of the country and its inhabitants, has been changed, and industry and happiness have been the result; but now the government is about to work a revolution, which, like all others that have taken place in this country, aims at too much; it must pull down before it can repair. A tax is proposed to be laid upon Beet Sugar, which will in its consequences as effectually ruin the manufacture as *that* has been supported by the favor of the same government, for it is not possible for one manufacturer in ten to observe the restrictions to which all are made subject. In the first place every manufactory must be enclosed by a high wall built at the expense of the proprietor, and to have but one door of entrance, just within which a house is to be prepared for the residence of Excisemen, who are to be on duty here day and night, and to have the supervision of the concern; every man who makes 100,000 kilogrammes of sugar is to pay these Excisemen 2000 francs per annum for their support; 150,000 kils., 3,500 fr., and then comes the primary tax of 15 francs per kilogramme, on all sugar that is made. Now what is the object of the Government? Is it to assist the colonies? to levy money in the way of a tax? or to ruin the Beet sugar trade? If it be the first let them reduce the duty upon Colonial sugar; if the second, let them tax the sugar as is proposed, to which there is no objection; if the third, the plan which they propose will serve their purpose most completely. Now a great proportion of the manufactories are erected in situations where they could not be surrounded by a wall, as they are attached to other buildings; to remove these is quite out of the power of the proprietors, who have in many instances expended a fortune in their erections and fittings up: these therefore must be abandoned, as must all those of small extent, who could not if they would, afford to keep the attendants out of their slender business; many others would quit a pursuit fettered with such odious exactions. It is true some of the large manufactories might be continued, for sugar would rise in price in consequence of a scarcity in the market; the result however would be, the people would be debarred, as formerly, of the use of it. I have been led into this subject by your remark that the Island of Guadaloupe has petitioned to be permitted to trade elsewhere than to France; but this, that Island has long done, and permission has not been given; nor will it be necessary if this tax be levied: but in the event of their being so permitted, how shall we in America be effected by it? would sugar be permitted to be introduced to the destruction of our own manufacture? From what I have seen I am not afraid to compete with the cane, acre for acre, for it is not the mere article of sugar that is of importance, or rather of the greatest importance; it is the spirit of industry, of happiness,—of beef and mutton, if you will, that it engenders in a country, which is of far greater consequence. Permit me to transcribe from one of the papers some remarks which are I think peculiarly applicable to the subject.—"However desirable it might be to preserve or to favor the Colonies, the time of their exclusive supply of the market with sugar is gone by; the species of cultivation now naturalized in 35 departments of France is well worth the produce of three Islands lost in the bosom of the ocean. To prefer the latter to the former is about as reasonable as to adhere to the use of bows and arrows after the invention of gunpowder.—The making of beet sugar, for which the population, in France has shown a wonderful apliude, is a kind of *God-send* that should be taken advantage of, for the uniting together of agricultural and manufacturing art; the whole system of the law for imposing duties on Beet Sugar is bad, it starts from false ideas, and leads to the most lamentable results."

I am aware, however, that the question of free trade, like that of the currency, is to be handled delicately; I am not competent to the task and must leave this knotty point to those who are. I shall be capable, however, to make Beet Sugar on my return; and if he who made two blades of grass grow where but one grew before, deserved well of his country, may I hope to enjoy that luxury on my return. The present season is remarkable for having its crushing process extended to an unusual length, which has given me advantages which I could not else have enjoyed. We are now busily engaged with the Molasses of second and third qualities, and I visit two manufactories for the purpose of initiation into this important branch of the process; I am also farming and planting beet roots for seed as well as preparing the material for clarifying at Mr. C.'s mills, at a short distance from the town. Mr. C. has two farms near, both of which I visit; he will have 400 acres of Beets on these this year; here are many hundred acres of wheat after Beets, clean as a garden, but the rotation is not good; spring corn is preferable, with seeds, and so Mr. Walker will say, I know I went to inspect the large sugar house of Monsieur, the Deputy, last week; I had a letter of introduction to him from the Mayor of Boulogne; he was absent on his duty at Paris, but his lady received me graciously, giving me a letter to the manager of the works; he was not present, so I reserved the letter, to show you the warmth and kindness which I experienced from all. The works cost £12,000, and expend the steam of 90 horse power, but the principle is not good, and they work to great disadvantage; several of their boilers cost 2,000 francs each.—They keep 40 horses and mules, and were engaged in sowing Beet seed with Mr. C—'s drill, which I should say drills five rows at once, harrowing in and rolling the seed at the same time. In a few days I am going to Valenciennes, to see a manufactory belonging to a farmer who has received the silver medal from the Society of Arts in Paris, for machinery by which with the help of his own family, he makes 50lbs of Sugar a day. I have heard also of two other manufacturers there who have improved machinery. But it is in this part of the country where they grow immense quantities of the white poppy for the oil. It is used instead of olive oil, and is sent to Paris and elsewhere to mix with that, and goes from thence all over the continent as the best *olive oil*. It is a very profitable crop, is cultivated with the greatest ease, and harvested most cheaply, coming ripe in about three months (some say two.) I visit two crushing mills, and am astonished to find that the produce of oil is 25 per cent from these insignificant seeds. One of these mills is on a very grand scale: the machinery in one room cost £4000, but is by no means necessary. I go to-morrow to see a windmill, where the same work is done to profit. The poppy is cultivated on exhausted soil, without manure; such yielding most oil. The seed is drilled, and kept clean, and the capsules when ripe are shaken into cloths spread upon the ground; and in one hour after, the oil is made and fit for market! This then is the crop for us; the plant flourishes well in high latitudes. I have this day dispatched to Havre, to the care of Messrs Wells & Green, a box containing 23 lbs. brown sugar, 1st and 2d quality *made under my inspection*; 6 lbs. of white powdered sugar of great quality, made from the Beet at Famars, near Valenciennes; two bottles poppy oil of 1st quality as samples, and 2 gallons of poppy seed of the true species, for sowing this season; which will yield seed sufficient for a good breadth next season. Will you *disseminate* this poppy seed very extensively; that we may judge of the proper soil, and the climate best suited to its growth.

Extract of a letter from a gentleman in London, dated March 30.

I enclose a letter from Mr. Pedder. He feels very sanguine. Has sent Beet seed per Havre Packets. He is very anxious to purchase the *seed drill*, about £20, and proposes having a model made. He considers it a highly valuable machine. I purpose writing to him to say that if he still entertains this opinion and a model will not clearly put you in possession of its merits, I will venture to authorise his drawings on me for the amount. Mr. Pedder seems very intelligent and assiduous and has been highly favored by circumstances. Dr. B. gave him very useful letters, and he met at Arras a Prussian professor and chemist, with a draughtsman, in pursuit of the same object who had nearly finished his enquiries and gave him the benefit of them; also, an engineer sent there by Messes. Taylor & Co. and who is giving him every information.—He says the machinery is expensive and powerful. Mr. Pedder will remain in that neighborhood some time. I think you were fortunate in selecting Mr. Pedder; and he hopes to succeed.

TO RAILROAD CONTRACTORS.

PROPOSALS will be received until the 8th day of December next, for the graduation and masonry of the first ten miles of the Gainsville and Narkeeta Railroad. A profile of the route, with plans and specifications of the work, will be exhibited at Gainsville, for ten days previous to the time of letting and all other information given, on application to the subscriber or to the Assistant Engineer. Recommendations will be expected in all cases, of persons not known to the officers of the company, or to the Engineer.

For the information of persons at a distance, it may be remarked, that this road commences at the town of Gainsville, on the Tombeckby river, and extends twenty-two miles south-west to Narkeeta in the State of Mississippi. The Tombeckby is navigable for Steamboats the greater portion of the year and having a direct communication with Mobile and New-Orleans, will afford facilities for procuring the supplies necessary for the hands employed on the work, or for their ready conveyance hither, if procured from a distance. The country through which the road is located, being peculiarly healthy, and the mildness of the climate admitting of operations throughout the winter season renders the contract peculiarly desirable to those wanting winter employment. To an enterprizing and energetic contractor the construction of this road offers the prospect of a profitable job.

D. H. BINGHAM, C. E.

Gainsville, Ala. Sept. 21, 1836. 42—tDec1

NOTICE TO CONTRACTORS.

WASHINGTON AND RALEIGH RAILROAD.

PROPOSALS will be received at the office of his Company in Wilmington (N. C) until the 15th of November for the graduation and bridging of 50 miles of the above Railroad, commencing at the north-east branch of the Cape Fear river, ten miles from Wilmington.

Any information which may be desired, can be obtained of Mr. T. H. Williamson, who will at all times be found on the line, or from the subscriber at Wilmington.

Contractors unknown to the undersigned must accompany these proposals with recommendations.

WALTER GWYNN.

October 15, 1836. 42—3t

THE NEW-JERSEY, HUDSON AND DELAWARE RAILROAD.

NOTICE is hereby given that under and by virtue of an act of the Legislature of the State of New-Jersey, entitled, "A further supplement to an act to incorporate the New-Jersey, Hudson and Delaware Railroad Company, passed the 8th day of March A. D., eighteen hundred and thirty-two," the books to receive subscriptions to the Capital Stock of said Company will be open at 10 o'clock, A. M., of each of the days following, viz:

On Tuesday, the 8th Nov. next, at Joseph Tilman's, Columbia, N. J.

Wednesday and Thursday, 9th and 10th Nov. next, at John J. Blair's, Gravelhill, N. J.

Friday, 11th Nov., at George Crockett's Marksboro, N. J.

Saturday, 12th Nov., at Peter B. Shafer's, Stillwater, N. J.

Monday, 14th Nov., at John S. Warbasse's, Newton, N. J.

Tuesday and Wednesday, 15th and 16th Nov., Abm. Brav's, Augusta, N. J.

Thursday, 17th Nov., at Stephen Ward's, Hamburg, N. J.

Friday and Saturday, 18th and 19th Nov., at H. Vibbert's, Dechertown, N. J.

Tuesday and Wednesday, 13th and 14th Dec., at United States Hotel, Newburgh, New-York.

Thursday, 15th Dec., at No 34 Wall-street, city of New-York.

And continue open at the last mentioned place until the whole stock shall have been subscribed for, or at the discretion of the Commissioners. But if the whole of the Stock shall be subscribed for at either of the above mentioned places, the books will be immediately closed.

The Capital Stock is $500,000 with liberty to increase to $800,000, divided into shares of $100 each.

The sum of $5 on each share is required to be paid on subscribing.

SAMUEL FOWLER,
JOHN BELL,
JOSEPH CHANDLER,
WILLIAM HYBERGER,
ENOS GOBLE,
DANIEL HAINES,
SAMUEL PRICE,
JOHN I. BLAIR,
JOSEPH E. EDSALL,
COMMISSIONERS

Dated Oct. 3rd, 1836 41—9t

PATENT RAILROAD, SHIP AND BOAT SPIKES.

☞ The Troy Iron and Nail Factory keeps constantly for sale a very extensive assortment of Wrought Spikes and Nails, from 3 to 10 inches, manufactured by the subscriber's Patent Machinery, which after five years successful operation, and now almost universal use in the United States, (as well as England, where the subscriber obtained a patent,) are found superior to any ever offered in market.

Railroad Companies may be supplied with Spikes having countersink heads suitable to the holes in iron rails, to any amount and on short notice. Almost all the Railroads now in progress in the United States are fastened with Spikes made at the above named factory—for which purpose they are found invaluable, as their adhesion is more than double any common spikes made by the hammer.

*** All orders directed to the Agent, Troy, N. Y., will be punctually attended to.

HENRY BURDEN, Agent.

Troy, N. Y., July, 1831.

** Spikes are kept for sale, at factory prices, by I. & J. Townsend, Albany, and the principal Iron Merchants in Albany and Troy; J. I. Brower, 222 Water street, New-York; A. M. Jones, Philadelphia; T. Janviers, Baltimore; Degrand & Smith, Boston.

P. S.—Railroad Companies would do well to forward their orders as early as practicable, as the subscriber is desirous of extending the manufacturing so as to keep pace with the daily increasing demand for his Spikes. (1J23am) H. BURDEN.

NEW ARRANGEMENT.

ROPES FOR INCLINED PLANES OF RAILROADS.

WE the subscribers having formed a co-partnership under the style and firm of Durpee, Coleman & Co., for the manufacturing and selling of Ropes for inclined planes of railroads, and for other uses, offer to supply ropes for inclined planes, of any length required without splice, at short notice, the manufacturing of cordage, heretofore carried on by S. S Durfee & Co., will be done by the new firm. All orders will be promptly attended to, and ropes will be shipped to any port in the United States.

8th month, 8th, 1836. Hudson, Columbia County, State of New-York.

E. S. TOWNSEND, GEORGE COLEMAN,
ROBT. C. FOLGER, SYDNEY S. DURFEE
38—tf.

FRAME BRIDGES.

THE subscriber would respectfully inform the public, and particularly Railroad and Bridge Corporations that he will build Frame Bridges, or vend the right to others to build, on Col. Long's Patent, throughout the United States, with few exceptions. The following sub-Agents have been engaged by the undersigned who will also attend to this business, viz.

Horace Childs,	Henniker, N. H.
Alexander McArthur,	Mount Morris, N. Y.
John Mahan,	do do
Thomas H. Cushing,	Dover, N. H.
Ira Blake,	Wakefield, N. H.
Amos Whitemore, Esq.,	Hancock, N. H.
Samuel Herrick,	Springfield, Vermont.
Simeon Herrick,	do do
Capt. Isaac Damon,	Northampton, Mass.
Lyman Kingsly,	do do
Elijah Halbert,	Waterloo, N. Y.
Joseph Hobard,	Dunkirk, N. Y.
Col. Sherman Peck,	Hudson, Ohio.
Andrew E. Turnbull,	Lower Sandusky, Ohio
William J. Turnbull,	do do
Sabried Dodge, Esq.,	(Civil Engineer,) Ohio.
Booz M. Atherton, Esq.	New-Philadelphia, Ohio.
Stephen Daniels,	Marietta, Ohio
John Rodgers,	Louisville, Kentucky.
John Tillson,	St. Francisville, Louis'a.
Capt John Bottom,	Tonawanda, Penn
Nehemiah Osborn,	Rochester, N. Y.

Bridges on the above plan are to be seen at the following localities, viz. On the main road leading from Baltimore to Washington, two miles from the former place. Across the Metawamkeag river on the Military road, in Maine. On the National road in Illinois, at sundry points. On the Baltimore and Susquehanna Railroad at three points. On the Hudson and Patterson Railroad, in two places. On the Boston and Worcester Railroad, at several points. On the Boston and Providence Railroad, at sundry points. Across the Contocook river at Hancock, N. H. Across the Connecticut river at Haverhill, N. H. Across the Contoocook river, at Henniker, N. H. Across the Souhegan river, at Milford, N. H. Across the Kennebec river, at Waterville, in the state of Maine.—Across the Genesse river, at Mount Morris, New-York, and several other bridges are now in progress.

The undersigned has removed to Rochester, Monroe county, New-York, where he will promptly attend to orders in this line of business to any practicable extent in the United States, Maryland excepted.

MOSES LONG.
General Agent of Col. S. H Long.
Rochester, May 22d, 1836. 19y-tf.

ALBANY EAGLE AIR FURNACE AND MACHINE SHOP.

WILLIAM V. MANY manufactures to order, IRON CASTINGS for Gearing Mills and Factories of every description.

ALSO—Steam Engines and Railroad Castings of every description.

The collection of Patterns for Machinery, is not equalled in the United States. 9—1y

ARCHIMEDES WORKS.

(100 North Moor street, N. Y.)

NEW-YORK, February 12th, 1836.

THE undersigned begs leave to inform the proprietors of Railroads that they are prepared to furnish all kinds of Machinery for Railroads, Locomotive Engines of any size, Car Wheels, such as are now in successful operation on the Camden and Amboy Railroad, none of which have failed—Castings of all kinds, Wheels, Axles, and Boxes, furnished at shortest notice.

H. R. DUNHAM & CO
4—ytf

STEPHENSON,

Builder of a superior style of Passenger Cars for Railroads.

No. 264 Elizabeth street, near Bleecker street, New-York.

RAILROAD COMPANIES would do well to examine these Cars; a specimen of which may be seen on that part of the New-York and Harlaem Railroad now in operation J25tf

AMES' CELEBRATED SHOVELS, SPADES, &c.

300 dozens	Ames' superior back-strap	Shovels
150 do	do do plain	do
150 do	do do cast steel	Shovels & Spades
150 do	do Gold-mining	Shovels
100 do	do plated	Spades
50 do	do socket	Shovels and Spades.

Together with Pick Axes, Churn Drills, and Crow Bars (steel pointed,) manufactured from Salisbury refined iron—for sale by the manufacturing agents,

WITHERELL, AMES & CO.
No. 2 Liberty street, New-York
BACKUS, AMES & CO.
No. 8 State street, Albany

N. B—Also furnished to order, Shapes of every description, made from Salsbury refined Iron 4—ytf

RAILWAY IRON, LOCOMOTIVES, &c

THE subscribers offer the following articles for sale.

Railway Iron, flat bars, with countersunk holes and mitred joints,

									lbs.
350 tons	2½	by	½,	15 ft in length,			weighing	$4\frac{66}{100}$	per ft.
280	" 2	"	½,	"	"	"		$3\frac{50}{100}$	"
70	" 1¾	"	½,	"	"	"		2½	"
80	" 1¼	"	½,	"	"	"		$1\frac{25}{100}$	"
90	" 1	"	½,	"	"	"		⅞	"

with Spikes and Splicing Plates adapted thereto. To be sold free of duty to State governments or incorporated companies.

Orders for Pennsylvania Boiler Iron executed.

Rail Road Car and Locomotive Engine Tires, wrought and turned or unturned, ready to be fitted on the wheels, viz 30, 33, 36, 42, 44, 54, and 60 inches diameter.

E. V. Patent Chain Cable Bolts for Railway Car axles, in lengths of 12 feet 6 inches, or 15 feet 2¼, 2¾ 3, 3¼. 3½, 3¾, and 3¾ inches diameter.

Chains for Inclined Planes, short and stay links, manufactured from the E. V. Cable Bolts, and proved at the greatest strain.

India Rubber Rope for Inclined Planes, made from New Zealand flax.

Also Patent Hemp Cordage for Inclined Planes, and Canal Towing Lines.

Patent Felt for placing between the iron chair and ston block of Edge Railways

Every description of Railway Iron, as well as Locomotive Engines, imported at the shortest notice, by the agency of one of our partners, who resides in England for this purpose.

Mr Solomon W. Roberts, a highly respectable American Engineer, resides in England for the purpose of inspecting all Locomotives, Machinery, Railway Iron &c. ordered through us

A. & G. RALSTON.
28-tf Philadelphia, No. 4, South Front st.

TO RAILROAD CONTRACTORS.

PROPOSALS will be received at the town of Lindon, until the 20th day of December next, for the graduation of the Lindon Railroad. A profile of the route, with plans and specifications of the work, will be exhibited at Lindon, for ten days previous to the letting, and all other information given on application to the subscriber, or the Assistant Engineer.

PROPOSALS will also be received at the same time and place, for furnishing and delivering at Beckley's Landing, 95,000 feet (L. M.) of long leaf pine or cypress scantling, sawed 5 by 9 inches, to be free from sap, knots or wind shakes, and 20, 25 and 30 feet long. Also 60,000 feet, or more, (L. M.) of white, or post oak scantling, sawed 5 by 7 inches, length to be specified hereafter, and 60,000 feet (L. M.) of white or post oak plank, 2 inches thick, 9 foot wide and 15 feet long.

Also for furnishing and delivering on the line of the road 10,500 undressed post oak logs, 8 feet long, and 10 to 15 inches in diameter.

Also for furnishing and delivering 3,160 post oak caps, dressed 8 by 10 inches, 8 feet long, and 6,320 post oak posts, dressed 10 inches square and of lengths hereafter to be specified.

Recommendations will be expected in all cases, of persons not known to the officers of the Company, or to the Engineer. For the information of persons at a distance, I would state, that the Lindon Railroad commences at Beckley's Landing on the Tombeckby River, a stream navigated by Steamboats the greater portion of the year;—and having a direct communication with Mobile and New-Orleans will afford the facility of procuring supplies and implements necessary for the hands employed on the work, or their ready conveyance hither, if procured at a distance.

Persons having mills on the river and disposed to contract for furnishing timber, will have the facility of delivering it by water communication. The country through which the road passes, being perfectly healthy, and the mildness of the climate admitting of operations throughout the winter season, renders the contract peculiarly desirable to those wanting winter employment

D H. BINGHAM, C. E.
Lindon, Ala., Sept, 17, 1836. 41—3t

RAILROAD CAR WHEELS AND BOXES, AND OTHER RAILROAD CASTINGS.

Also, AXLES furnished and fitted to wheels complete at the Jefferson Cotton and Wool Machine Factory and Foundry, Paterson, N. J. All orders addressed to the subscribers at Paterson, or 60 Wall street, New-York, will be promptly attended to.

Also, CAR SPRINGS

Also, Flange Tires, turned complete

J8 ROGERS, KETCHUM & GROSVENOR